# PESTICIDES IN OUR BEDROOM

The study was initiated by the organizers of the European citizens' initiative “Save bees and farmers”. We thank everyone involved in the 21 member states.

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# CONTENT OVERVIEW

# SUMMARY

## Background

Intensive agriculture being the dominant model of food production in the EU, citizens living in rural areas are regularly exposed to pesticides. Numerous epidemiological studies indicate that residing in close proximity to intensively farmed land is associated with an increased risk of cancers, miscarriages and birth malformations, cognitive impairment, etc. In addition, residents who live closer to pesticide-treated land have shown higher levels of DNA damage, oxidative stress, and decreased cholinesterase activity. At the same time, some widely used pesticides are suspected by scientific and European regulatory agencies of having carcinogenic, mutagenic, or reproductive-damaging properties.

## The Study

Pesticides sprayed in rural areas drift outside the field and can be found in people's gardens and homes. The present study aims at assessing the level of indoor exposure to pesticides. It was initiated by the European Citizens' Initiative "Save Bees and Farmers" and followed a Citizen Science approach. Residents from intensive agricultural areas drew house dust samples in their bedrooms with the support of partner NGOs in 21 member states. As a common indicator of residential pollution levels, these samples were analysed in a specialized laboratory in France for residues of 30 pesticides commonly used in the EU.

## The Results

On average, the 21 bedroom samples tested were contaminated with 8 pesticides per sample. The highest found number was 23 for Belgium and the lowest was 1 for Malta. Pesticides suspected of causing cancer in humans, according to EU authorities, were detected in every fourth sample. Known cholinesterase inhibitors were found in every third sample. Pesticides suspected (also according to EU authorities) of harming human reproduction were found in 17 of the 21 bedroom samples (81%).

These results are worrying because they suggest a possible causal link between residential exposure to hazardous pesticides, poorer health parameters of residents (DNA damage, oxidative stress, and cholinesterase inhibition), and increased risk of cancer, reproductive harm, and other chronic impairments.

Our study highlights an urgent need to replace synthetic pesticides with non-chemical alternatives. Furthermore, large-scale representative studies should be carried out by governmental agencies to properly assess the level of pesticides citizens are regularly exposed to.

# INTRODUCTION

In the European Union, intensive agriculture is the dominant model of agriculture. It is highly dependent on chemistry (pesticides and fertilizers) and fossil fuels. About 400,000 tonnes of pesticides are used annually in the European Union, as a means to protect agricultural crops from predators (mostly insects and arachnids), diseases (fungi and bacteria), or competition from other plants (weeds). There are different methods for applying these active substances. Spraying is the most frequent mode of application, with important drifts to neighbouring areas, including wild areas and private properties. Most pesticides do not reach their destination.

**What is pesticide drift and how does it occur?**

The proportion of the pesticide quantity applied that is not deposited in the treated field is referred to as drift. The extent to which pesticide drift occurs depends on temperature, wind strength, driving speed, and the choice of spraying equipment, as well as on the physicochemical properties of the pesticide ingredients. Pesticide active substances with high vapour pressure can evaporate to a relevant extent and travel long distances in the gaseous state before they get condensed. Last but not the least, pesticides bound to fine soil particles can be blown up by the wind and carried over long distances.

**Humans as non-target organisms**

The negative effects of pesticide drift on so-called non-target organisms such as bees, butterflies, birds, or amphibians are widely known. However, humans can also unexpectedly become non-target organisms. This applies in particular to farmers when they apply these pesticides, but also to residents in rural areas. NGOs working on the issue of pesticides are frequently contacted by people affected by pesticide drift: sudden "chemical smells" accompanied by burning eyes, breathing difficulties, headaches, nausea, or skin rashes are often reported,,. But can pesticides that are legally on the market and are used as intended cause such symptoms at all?

**Pesticide drift and the EU pesticide regulation**

By law, pesticides may not cause such observed effects on humans. According to Article 4 of the EU Pesticide Regulation (EC) No 1107/2009, pesticides can only be authorised in the EU if they have "no immediate or delayed harmful effect on human health" when used as intended. This includes that the application of pesticides does not endanger users, bystanders, or neighbours. To assess this risk, the authority usually uses calculation models. But these are based on assumptions and not on measurements. The crucial question is therefore whether the pesticides actually behave in the wild as predicted in the authorities' calculation models. But answers to this question seem to be of little interest to those responsible in the EU. Investigations by regulatory authorities or government agencies aimed at ascertaining the extent of pesticide drift and possible associated health risks are unfortunately very rare. Even when the authorities are actively made aware of (suspected) cases of pesticide drift with associated health problems, experience shows that they are happy to declare themselves not responsible4,5,6.

## Possible health consequences

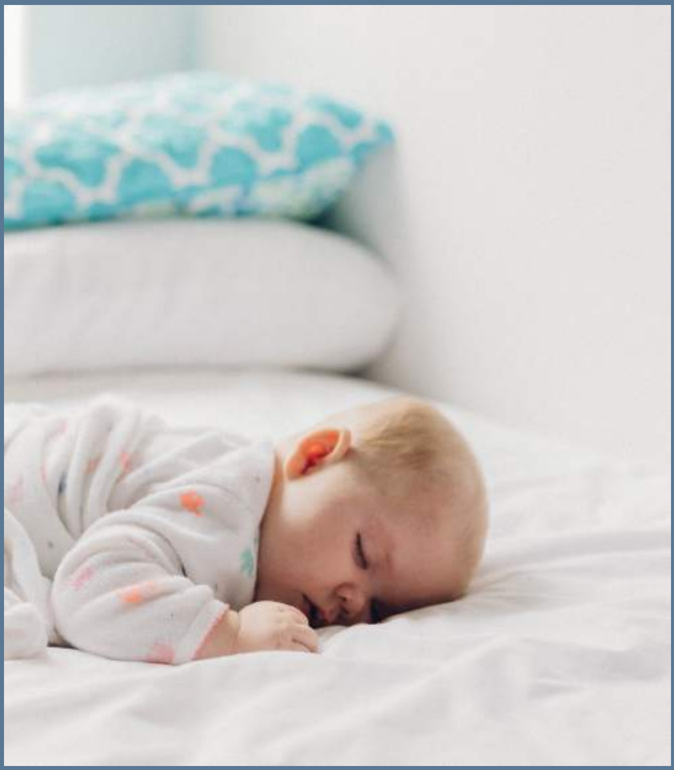
Given the abundance of epidemiological studies showing a correlation between the proximity of the place of residence to agricultural areas and the frequency of premature births and malformations, autism spectrum disorders, ADHS, Parkinson's disease, respiratory diseases, as well as numerous types of cancer including childhood cancer, such disinterest on the side of the authorities is disconcerting.

From a legal point of view, the responsibility of the regulatory authority does not end with the issuing of the approval notice; especially not if, in the course of the application of a pesticide, it should become apparent that the requirements for approval according to Article 4 and/or Article 29 of the EU-pesticide regulation may not (or no longer) be met.

However, governmental investigations into the issue of pesticide drift are far too rare. Many of the systematic scientific investigations - such as the investigation of pesticides in South Tyrolean playgrounds or residential interiors in agriculturally managed areas of France - can be traced back to private initiatives with the participation of those directly affected. This also applies to what is probably the most extensive measurement programme for airborne pesticides to date, covering 163 sites throughout Germany. Two major findings were: 10% of the pesticide active substances investigated were responsible for 90% of the positive detections (by far the most frequent was the herbicide active substance glyphosate and its metabolite AMPA). Secondly, no "pesticide-free" sites could be found, not even in the most remote areas, which are, all the more, under nature conservation. The latter finding is particularly worrying since we can assume that the extent of pesticide contamination increases significantly with proximity to intensively farmed areas.

## Aim of the present study

Against this background, the initiators of the European Citizens' Initiative Save Bees and Farmers have initiated a sample survey to assess indoor pesticide exposure in agricultural regions of different EU Member States. House dust is generally considered a good indicator of indoor exposure to environmental toxins of different origins. Recent studies have, in particular, shown that house dust analysis is suitable to characterise the accumulation of pesticides in residential areas as a result of drift from agricultural use.



# METHODS

Following a Citizen Science Approach, the initiators of the European Citizens' Initiative "Save Bees and Farmers"17 addressed a letter to organisations in all 27 EU Member States officially supporting the Citizens' Initiative in April 2021 and invited them to participate in the present sample study. The contracted laboratory received samples from 21 member states.

**Sampling**

The requirement for each partner organisation in these 21 Member States was 1) to identify a private residence in an intensively farmed area with the distance between their house and the nearest agricultural land being less than 100 meters, and 2) to ensure that a house dust sample was taken there in June-July 2021 and sent immediately by post to our testing laboratory YOOTEST in France for further analysis. The instructions for sample collection (see Appendix, Table A, p. X), as well as the corresponding equipment, were provided to the participants by the laboratory by post.
The bedroom was determined as a suitable location for the sample (in one case, the sample was taken in the working room, as the bedroom was equipped with an air filter meant to reduce pesticide exposure). All participants were asked not to vacuum for one week before sampling. The sampling itself was done with the help of a conventional vacuum cleaner, on which the attachment with a collection bag provided by the laboratory was mounted.

**Pesticide Analysis**

The method for pesticide analysis in dust was developed by YOOTEST and it analysed 30 active substances listed in the Annex (Table A, p. X). Although these 30 active substances represent less than 10% of the pesticide active substances authorised in the EU, they still cover the majority of those pesticides that were frequently found in other comparable studies. However, the spectrum of analysis does not include glyphosate and its metabolite AMPA, the active ingredient most frequently detected in similar studies, for reasons of analytical and cost complexity.

**Quantification**

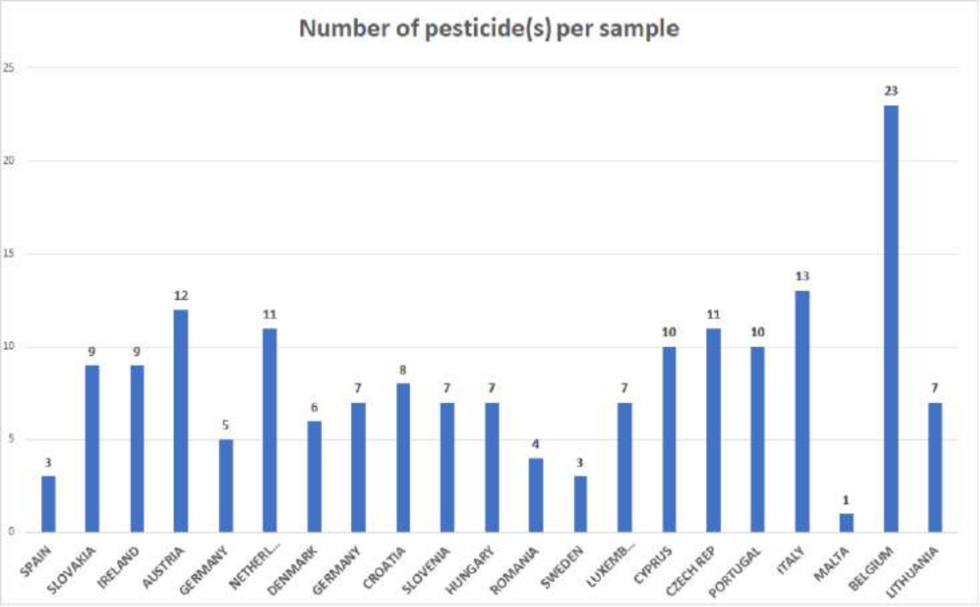
The sensitivity of the analytical method is variable for all pesticide active substances. The resulting different detection limits (LD = Limit of Detection) and limits of quantification (LQ = Limit of Quantification) can be seen in the appendix (….). For pesticide exposures that were above the LD but below the LQ (yellow cells of the table), the LD was taken as the actual value for simplification. This conservative approach ensured that the calculated cumulative exposures were not overestimated (see Annex, Table A, p. X)

# RESULTS

An overview of all analytical results is given in the Annex (Table A):

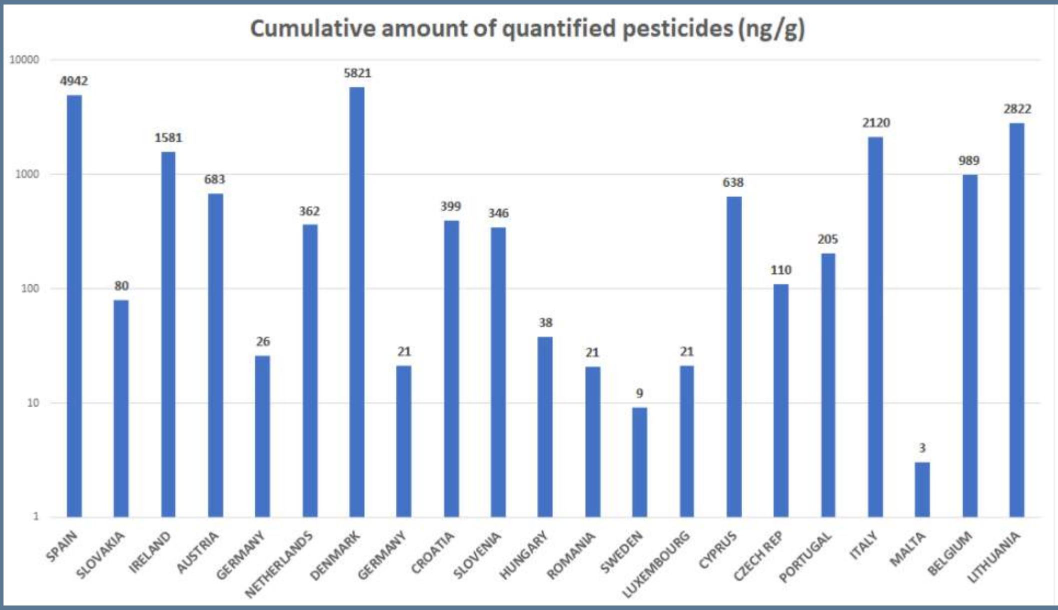
Pesticide residues were detected in all 21 EU countries. The highest load measured by the number of active substances detected was 23 active substances (Belgium); the lowest was one active substance (Malta) (see Fig. 1).

Figure 1



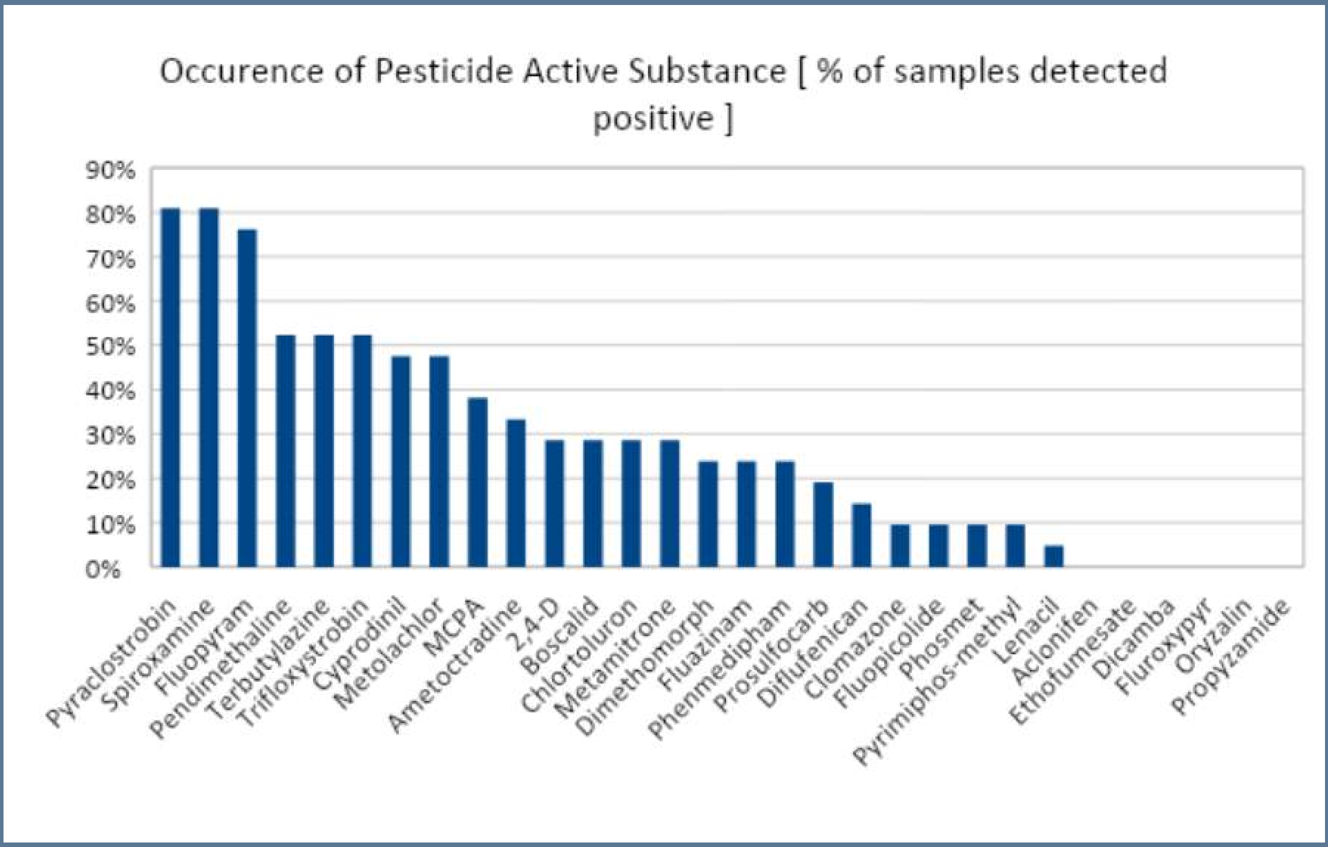

The highest pesticide load (measured by the total amount of pesticide active substances detected) was 4942 mg/kg (Denmark); the lowest was 3 mg/kg (Malta) (see Fig 2).

Figure 2



Of the 30 pesticide active substances that have been analysed in this study, 24 could be detected. The most frequently detected active substances were spiroxamine, pyraclostrobin and fluopyram. These three active substances were detected in more than 75% of all samples. The following table provides an overview of the detected active substances, sorted by their detection frequency.

Figure 3




Note:

It should be noted that the results of the present study are snapshots that are specific only to the respective (randomly selected) sites and the respective time of the study. They do not allow any comparative conclusions to be drawn about average pesticide contamination in individual EU countries, which was never the aim of this study.

# CONCLUSION

The results we have been able to obtain with 21 samples from different EU member states and using a study spectrum limited to only 30 active substances, out of the 450 EU-approved pesticides, clearly demonstrate that people living in agricultural areas can be exposed to measurable levels of a variety of pesticide active substances in their homes all over the EU.

Human biomonitoring studies have found a link between pesticide contamination in house dust and in the body samples of household residents. Moreover, residents living closer to pesticide-treated agricultural land not only tend to have higher levels of pesticides in hair samples and urine, but also higher levels of DNA damage, oxidative stress markers, and reduced cholinesterase activity than people living further away.

**N**umerous epidemiological studies have demonstrated a link between proximity to agricultural areas and the incidence of various chronic diseases such as cancer, infertility, miscarriages, birth malformations, and hormonal disorders7-13. Against this background, it is particularly worrying that many of the pesticide active ingredients that end up in Europeans' bedrooms can be linked to the above-mentioned negative health effects, according to EU regulators and scientists.

**T**wo of the 24 detected pesticide active substances (Chlortoluron und Lenacil) have been classified by EU regulators as suspected human carcinogens, and four pesticides (Spiroxamine, Chlortoluron, Fluazinam, Phosmet) were classified as suspected reproductive toxins. Reprotoxic substances are chemicals that have the potential of damaging human reproduction and causing malformations in the unborn child. Moreover, according to the scientific literature, five more pesticides have the potential to damage our hormone systems (2,4-D, Fluazinam, Metolachlor, Pendimethalin, Phosmet).

In 2009, the EU set a regulatory framework aiming at reducing farmers' dependency on pesticides. The aim of this directive was to reduce exposure of citizens and the environment to pesticides and stimulate the uptake of non-chemical alternatives. Twelve years later, the European Commission itself acknowledged that the implementation of this directive has failed, and throughout the EU, pesticide use has not gone down. This is due to a lack of political will and to the great influence of the agricultural industry, which is preventing the needed changes.

On the other hand, scientific reports show that pesticide-free agroecological practices can feed the world and that we have the tools to develop virtuous agriculture that reconciles food or feed production and the environment.

In the meantime, the European Commission has acknowledged that the current intensity of pesticide use in European agriculture is causing major ecological damage and health risks. Therefore in May 2020, the European Commission set the target of halving the use and risk of pesticides by 2030 as part of the European Green Deal. However, there is fierce opposition from the pesticide industry and – unfortunately - most of the member states.

Our European Citizens' Initiative Save Bees and Farmers aims at collecting 1 million signatures by 30 September 2021, asking a pesticide-free agriculture throughout the EU. A successful ECI will trigger a legislative process at European Commission and European Parliament levels to phase out the use of synthetic pesticides in the EU, within 15 years and restore biodiversity on agricultural land.

It should be noted that the results of the present study are snapshots that are specific only to the respective (randomly selected) sites and the respective time of the study. They do not allow any comparative conclusions to be drawn about average pesticide contamination in individual EU countries, which was never the aim of this study.

# TESTIMONIES

**CROATIA**

*"It is increasingly difficult to live in an environment that is heavily overloaded with all kinds of pesticides, spread mindlessly by individuals and the local authorities. There is a lot of ill-health on the island (cancers, thyroid disruption etc.) to an unexpected degree, given that Hvar island is famous for its natural beauty. We at Eco Hvar are doing our best to change mindsets and practices, in the hope that Hvar will eventually GO ORGANIC!"*

- Vivian Grisogono

**ESTONIA**

*"Well, it is a risky thing, to live near intensive fields. When the direction of the wind is bad, then it blows the pesticide residues towards our bees and sometimes they die. If we are lucky, then there are no big problems some years. My concern is, that even if I replace my bees (who have died because of the pesticides), who will replace wild bees? Bumble bees? Other useful insects?"*

- Aado Niinep

**CZECH REPUBLIC**

*"Raising children close to the fields presumably rich in pesticides is sometimes stressful: especially when the spraying machinery is coming, we are leaving the area in a big hurry, like an exodus from the natural disaster. Local farmers are used to intensifying their production for decades, nearly all the green spots from the landscape have been wiped out and they are returning very slowly. Due to harmfully set agricultural subsidies, the farmers expand the fields centimeter to the centimeter, year by year. And new trees in the landscape are still more a miracle than a stable trend. It's sad. But there are also some examples of returning old roads and alleys in the road, green places, and a more nature-friendly style of agriculture. So there is some hope."*

- Jan Skalik

**SPAIN**

*"The house is located in a rural area on the banks of the Ría de Arousa. It is somewhat isolated and surrounded by small multi-owner vineyards interspersed with strips of different types of crops such as fruit trees, potatoes and corn. As there are so many owners and crops, each one uses their own phytosanitary products in a more or less professional way and it is quite easy for the excess to be transported by air"*

- Luis Dorrio

**MALTA**

*"In Malta open spaces are a luxury, so in my case, I do prefer having agricultural land next door other than the main road or a high rise building. In a semi-arid country such as Malta, open agricultural land allows aquifer recharge and the use of this land for agricultural purposes somewhat discourages further development and land speculation."*

- Keith Buhagiar

**DENMARK**

*"The farm is surrounded by large, conventional fields, where mostly barley and wheat is grown.*

*In some cases, the fields are less than 50 meters away from the residential building. Normally, it is not a problem, but there can be strong smells of slurry and in the early hours of some spring mornings, I can also detect the pesticides.*

*What I have done, is to have some pastures with sheep on most sides of the property. There is also a large garden with tall trees to protect some of the drift to come to close."*

- Inge Ring

**SLOVENIA**

*"Unfortunately, in Slovenia there is a regulation that hop fields are more than only 20 m away from residential houses, schools. Definitely not enough. These conditions are existing because awareness of the use of toxic pesticides has barely begun. It started among consumers, but not yet among farmers. As an agronomist and following the recommended professional policy measures, I still have no hope that the state of the farming methodology will soon change into a method of organic and biodynamic farming. Unfortunately, there is no political will yet, and there are too many violent guidelines for competitiveness, for increasing agricultural production per unit, and too much consideration is given to the pressures of plant protection. Unfortunately, there is still not enough atmosphere to work on strengthening agricultural crops / plants, no attempts to use homeopathic remedies, no attempts to use biodynamic preparations, teas and other natural active ingredients. There is too little concern to increase soil fertility and preserve traditional old varieties. We have enough knowledge to be able to ban the use of pesticides in a few years and offer a method of biodynamic farming, but we have neither the opportunity because there is no political, much less economic, nor technological will.*
*I am grateful for the opportunity to participate in this international project by preparing a sample of house dust and I look forward to the result and further cooperation. I hope that we will help raise the awareness of agronomists and farmers and contribute to reducing the use of pesticides.*

- Maja Klemen Cokan

**HUNGARY**

*"It really saddens me to see that living in the countryside can so easily come with the risk of being constantly exposed to potentially harmful chemicals. The farmers and gardeners of nearby agricultural fields, orchards and vineyards seem to be either unaware or completely ignorant of the potential hazard that their regularly applied chemicals might constitute to the people who live here..not to mention to bees and other pollinators. One might assume that at least they adjust the time of spraying in a way to minimise the number of affected neighbours, but it is rarely the case. Farmers' awareness and sensitivity should be certainly increased."*

- Klára Boromisza

**IRELAND**

*"I live next to a farm which has been tilled intensively for over thirty years. I am concerned about the effect this farm is having on the environment and in particular my drinking water. The run-off from sprays after a rain shower must go directly into the water courses and groundwater. I have a reverse osmosis system on my drinking water and hope that this removes any agricultural chemicals which may be in the water. I have noticed that there is very little wildlife activity on my neighbour's farm and worry that farms like this are contributing to the loss of biodiversity. I have an old pasture farm and use no artificial fertilisers or chemicals sprays on my land. I practise Holistic Planned Grazing and hope to show that regenerative agriculture gives better financial rewards as well as improving soil fertility, biodiversity and the well-being of the farmer."*

- Suzanne Brady

**GERMANY**

*"We live near a huge field. It extends all the way to the property fences of our village. For at least 30 years it has been tormented with pesticides and artificial fertilizers on an industrial scale. usually, corn and rapeseed are grown alternately. As a result, butterflies, bees, beetles, birds, amphibians and small mammals have disappeared. The birds throw their young out of the nest because there are hardly any insects left.*

*Not only here, but in the whole of the Uckermark, the fields are tormented by the agricultural industry. People don't fall dead immediately, but they have more respiratory problems, Parkinson's disease and cancer. It is very difficult to prove causality here: years often pass between exposure to the poison and creeping illness.*

*How can you poison your own livelihoods? When dealing with politics and the authorities, I always run into a wall."*

- Sybilla Keitel

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# ANNEX

## Table A - Results of pesticide residue tests in 21 EU Member States

| PESTICIDE | SPAIN | SLOVAKIA | IRELAND | AUSTRIA | GERMANY | NETHERLANDS |
|---|---|---|---|---|---|---|
| | YD-0521-a1in uo | YD-0521-5b2z mp | YD-0521-rxuw 5r | YD-0521-eadc rz | YD-0521-le73 x7 | YD-0521-d1kbq7 |
| **Concentrations in ng/g** | 112759 | 112760 | 112770 | 112784 | 112787 | 112864 |
| Substance | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* |
| Aclonifen | ND | ND | ND | ND | ND | ND |
| Diflufenican | ND | ND | 29,0 | ND | ND | ND |
| Ethofumesate | ND | ND | ND | ND | ND | ND |
| Pendimethaline | ND | 3,0 | ND | 35,2 | 13,7 | 127 |
| 2,4-D | 4936 | ND | 795 | ND | ND | ND |
| Ametoctradine | 3,0 | ND | ND | ND | ND | ND |
| Boscalid | ND | 40,8 | ND | 29,5 | ND | ND |
| Chlortoluron | ND | ND | ND | ND | 3,0 | ND |
| Clomazone | ND | ND | ND | ND | ND | ND |
| Cyprodinil | ND | 17,7 | ND | 42,8 | ND | 3,0 |
| Dicamba | ND | ND | ND | ND | ND | ND |
| Dimethomorph | ND | ND | ND | ND | ND | ND |
| Fluazinam | ND | ND | ND | 340 | ND | 3,0 |
| Fluopicolide | ND | ND | ND | ND | ND | ND |
| Fluopyram | 3,0 | 3,0 | 3,0 | 11,9 | ND | 3,0 |
| Fluroxypyr | ND | ND | ND | ND | ND | ND |
| Lenacil | ND | ND | ND | ND | ND | ND |
| MCPA | ND | ND | 739 | 30,3 | ND | 197 |
| Metamitrone | ND | ND | 3,0 | 133 | ND | 3,0 |
| Metolachlor | ND | ND | 3,0 | 3,0 | ND | 3,0 |
| Oryzalin | ND | ND | ND | ND | ND | ND |
| Phenmedipham | ND | ND | ND | ND | ND | 3,0 |
| Phosmet | ND | ND | ND | ND | ND | ND |
| Propyzamide | ND | ND | ND | ND | ND | ND |
| Prosulfocarb | ND | 3,0 | ND | ND | ND | 3,0 |
| Pyraclostrobin | ND | 3,0 | 3,0 | 3,0 | 3,0 | 14,1 |
| Pyrimiphos-methyl | ND | ND | ND | ND | ND | ND |
| Spiroxamine | ND | 3,0 | 3,0 | 3,0 | 3,0 | ND |
| Terbutylazine | ND | 3,0 | 3,0 | 3,0 | 3,0 | ND |
| Trifloxystrobin | ND | 3,0 | ND | 48,4 | ND | 3,0 |

*Final concentration: Yellow cells: Detected with a concentration between the Limit of Detection and Limit of Concentration: the value of the Limit of Detection has been used for calculating the final pesticide concentration in the sample.

ND: Not Detected

| PESTICIDE | DENMARK | GERMANY | CROATIA | SLOVENIA | HUNGARY | ROMANIA | SWEDEN |
|---|---|---|---|---|---|---|---|
| | YD-0521-1v8qyf | YD-0521-sj4o7h | YD-0521-vkhu1j | YD-0521-xin0uh | YD-0521-g3tcnd | YD-0521-sfqlzu | YD-0521-za3taq |
| **Concentrations in ng/g** | 112865 | 112866 | 112872 | 112873 | 112876 | 112941 | 112947 |
| Substance | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* |
| Aclonifen | ND | ND | ND | ND | ND | ND | ND |
| Diflufenican | ND | ND | ND | ND | ND | ND | ND |
| Ethofumesate | ND | ND | ND | ND | ND | ND | ND |
| Pendimethaline | ND | ND | 10,5 | 3,0 | 10,2 | ND | ND |
| 2,4-D | ND | ND | ND | ND | ND | ND | ND |
| Ametoctradine | ND | ND | ND | ND | ND | ND | 3,0 |
| Boscalid | ND | ND | 104 | ND | ND | ND | ND |
| Chlortoluron | ND | 3,0 | 3,0 | ND | ND | ND | ND |
| Clomazone | ND | ND | ND | ND | ND | ND | ND |
| Cyprodinil | ND | 3,0 | 3,0 | ND | 3,0 | ND | ND |
| Dicamba | ND | ND | ND | ND | ND | ND | ND |
| Dimethomorph | ND | ND | ND | ND | ND | ND | ND |
| Fluazinam | ND | ND | ND | ND | ND | ND | ND |
| Fluopicolide | ND | ND | ND | ND | ND | ND | ND |
| Fluopyram | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 | ND | 3,0 |
| Fluroxypyr | ND | ND | ND | ND | ND | ND | ND |
| Lenacil | ND | ND | ND | ND | ND | ND | ND |
| MCPA | 5806 | ND | ND | ND | ND | ND | ND |
| Metamitrone | ND | ND | ND | ND | ND | ND | ND |
| Metolachlor | ND | 3,0 | ND | 216 | 3,0 | 11,9 | ND |
| Oryzalin | ND | ND | ND | ND | ND | ND | ND |
| Phenmedipham | 3,0 | ND | ND | ND | ND | ND | ND |
| Phosmet | ND | ND | ND | ND | ND | ND | ND |
| Propyzamide | ND | ND | ND | ND | ND | ND | ND |
| Prosulfocarb | 3,0 | ND | ND | ND | ND | ND | ND |
| Pyraclostrobin | 3,0 | 3,0 | 269 | 3,0 | 3,0 | ND | 3,0 |
| Pyrimiphos-methyl | ND | ND | ND | ND | ND | ND | ND |
| Spiroxamine | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 | ND |
| Terbutylazine | ND | 3,0 | ND | 116 | 12,5 | 3,0 | ND |
| Trifloxystrobin | ND | ND | 3,0 | 3,0 | ND | 3,0 | ND |

* Final concentration: Yellow cells: Detected with a concentration between the Limit of Detection and Limit of Concentration: the value of the Limit of Detection has been used for calculating the final pesticide concentration in the sample
ND: Not Detected

| PESTICIDE | LUXEMBOURG | CYPRUS | CZECH REP | PORTUGAL | ITALY | MALTA | BELGIUM | LITHUANIA |
|---|---|---|---|---|---|---|---|---|
| | YD-0521-awb2s5 | YD-0521-ynsb9r | YD-0521-zik4he | YD-0521-7x12gp | YD-0521-aiag5p | YD-0521-1vdknl | YD-0521-v6c9me | YD-0521-7xf8c8 |
| **Concentrations in ng/g** | 112953 | 112954 | 112963 | 113014 | 113026 | 113045 | 113097 | 113115 |
| Substance | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* | Final Conc.* |
| Aclonifen | ND | ND | ND | ND | ND | ND | ND | ND |
| Diflufenican | ND | ND | ND | 3,0 | ND | ND | 3,0 | ND |
| Ethofumesate | ND | ND | ND | ND | ND | ND | ND | ND |
| Pendimethaline | ND | 10,8 | 33,8 | ND | ND | ND | 38,8 | 28,3 |
| 2,4-D | ND | 484 | ND | 168 | ND | ND | 167 | 469 |
| Ametoctradine | 3,0 | 14,9 | ND | 3,0 | 19,4 | ND | 3,0 | ND |
| Boscalid | ND | 84,2 | ND | ND | 75,1 | ND | 148 | ND |
| Chlortoluron | 3,0 | ND | 3,0 | ND | ND | ND | 3,0 | ND |
| Clomazone | ND | ND | ND | ND | 10,7 | ND | 3,0 | ND |
| Cyprodinil | ND | 3,0 | ND | ND | 17,5 | ND | 53,7 | 3,0 |
| Dicamba | ND | ND | ND | ND | ND | ND | ND | ND |
| Dimethomorph | ND | 13,4 | 3,0 | 12,7 | 21,5 | ND | 15,2 | ND |
| Fluazinam | ND | ND | ND | 3,0 | 1136 | ND | 15,9 | ND |
| Fluopicolide | ND | ND | ND | ND | ND | ND | 10,4 | 3,0 |
| Fluopyram | ND | 3,0 | 3,0 | 3,0 | 3,0 | ND | 22,3 | ND |
| Fluroxypyr | ND | ND | ND | ND | ND | ND | ND | ND |
| Lenacil | ND | ND | ND | ND | ND | ND | 3,0 | ND |
| MCPA | ND | ND | 30,3 | ND | 30,3 | ND | 244,7 | 2313 |
| Metamitrone | 3,0 | ND | ND | ND | 24,8 | ND | 12,5 | ND |
| Metolachlor | 3,0 | ND | 3,0 | ND | ND | ND | 3,0 | ND |
| Oryzalin | ND | ND | ND | ND | ND | ND | ND | ND |
| Phenmedipham | 3,0 | ND | 3,0 | ND | ND | ND | 28,2 | ND |
| Phosmet | ND | ND | ND | ND | 285 | ND | 19,3 | ND |
| Propyzamide | ND | ND | ND | ND | ND | ND | ND | ND |
| Prosulfocarb | ND | ND | ND | ND | ND | ND | 3,0 | ND |
| Pyraclostrobin | ND | 17,8 | 3,0 | 3,0 | 3,0 | ND | 41,3 | 3,0 |
| Pyrimiphos-methyl | ND | 3,0 | 21,7 | ND | ND | ND | ND | ND |
| Spiroxamine | 3,0 | ND | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 |
| Terbutylazine | 3,0 | ND | ND | 3,0 | ND | ND | 3,0 | ND |
| Trifloxystrobin | ND | 3,0 | 3,0 | 3,0 | 491 | ND | 145 | ND |

* Final concentration: Yellow cells: Detected with a concentration between the Limit of Detection and Limit of Concentration: the value of the Limit of Detection has been used for calculating the final pesticide concentration in the sample
ND: Not Detected

# Table B – Occurrence frequency per active substance

| Substance | Occurrence | Mean (ng/g) | Maximum (ng/g) | LD (ng/g) | LQ (ng/g) | Toxicity and EU-Hazard Classification |
|---|---|---|---|---|---|---|
| Pyraclostrobin | 81% | 19,9 | 269 | 3,0 | 10,0 | |
| Spiroxamine | 81% | <LQ | <LQ | 3,0 | 10,0 | Repr.2* |
| Fluopyram | 76% | <LQ | 22,3 | 3,0 | 10,0 | |
| Pendimethaline | 52% | 15,4 | 127 | 3,0 | 10,0 | ED*** |
| Terbutylazine | 52% | <LQ | 116 | 3,0 | 10,0 | |
| Trifloxystrobin | 52% | 34,1 | 491 | 3,0 | 10,0 | |
| Cyprodinil | 48% | <LQ | 53,7 | 3,0 | 10,0 | |
| Metolachlor | 48% | 13,0 | 216 | 3,0 | 10,0 | ED*** |
| MCPA | 38% | 452 | 5806 | 30,3 | 100 | |
| Ametoctradine | 33% | ND | 19,4 | 3,0 | 10,0 | |
| 2,4-D | 29% | 334 | 4936 | 30,3 | 100 | ED*** |
| Boscalid | 29% | 22,9 | 148 | 3,0 | 10,0 | |
| Chlortoluron | 29% | ND | <LQ | 3,0 | 10,0 | Repr.2*, Carc.2** |
| Metamitrone | 29% | <LQ | 133 | 3,0 | 10,0 | |
| Dimethomorph | 24% | <LQ | 21,5 | 3,0 | 10,0 | |
| Fluazinam | 24% | 71,4 | 1136 | 3,0 | 10,0 | Repr.2*, ED*** |
| Phenmedipham | 24% | ND | 28 | 3,0 | 10,0 | |
| Prosulfocarb | 19% | ND | <LQ | 3,0 | 10,0 | CI**** |
| Diflufenican | 14% | ND | 29,0 | 3,0 | 10,0 | |
| Clomazone | 10% | ND | 10,7 | 3,0 | 10,0 | |
| Fluopicolide | 10% | ND | 10,4 | 3,0 | 10,0 | |
| Phosmet | 10% | 14,5 | 285 | 3,0 | 10,0 | Repr.2*, ED***, CI**** |
| Pyrimiphos-methyl | 10% | ND | 21,7 | 3,0 | 10,0 | CI**** |
| Lenacil | 5% | ND | <LQ | 3,0 | 10,0 | Carc.2** |
| Aclonifen | 0% | ND | ND | 30,3 | 100 | |
| Ethofumesate | 0% | ND | ND | 30,3 | 100 | |
| Dicamba | 0% | ND | ND | 30,3 | 100 | |
| Fluroxypyr | 0% | ND | ND | 30,3 | 100 | |
| Oryzalin | 0% | ND | ND | 7,6 | 25,0 | |
| Propyzamide | 0% | ND | ND | 3,0 | 10,0 | |

* suspected carcinogen; ** suspected reproductive toxin; ***potential endocrine disruptor; **** cholinesterase inhibitor