

Pollution monitoring (Insignia)

In 2017, the European Parliament proposed a Pilot Project to develop a system for environmental monitoring of pesticides using the honey bee (*Apis mellifera*) as a bioindicator. The European Commission successfully implemented the proposal in the 2018-2021 period. In 2020, the Parliament proposed a Preparatory Action to build on the piloted work, expand the monitoring scope to other environmental pollutants such as heavy metals, air pollutants and microplastics, and roll out the monitoring system on the ground in all EU countries. The Commission is currently implementing the Preparatory Action.

Preparatory Action (2022-2023)

The Action started in January 2022 and will run until the end of 2024. The survey will include frequent sampling of more than 300 apiaries in all 27 EU countries, from April to September 2023. Almost 10,000 samples will be collected, and close to 17,000 analyses will be done to monitor environmental pollutants (pesticides, heavy metals, air pollutants, microplastics, veterinary products), as well as pollen. The project's budget is EUR 5 million.

More information can be found at the [project's website](#).

Pilot Project (2018-2021)

The Pilot Project was implemented by the Insignia project. More information about the project and the Insignia consortium can be found at <https://www.insignia-bee.eu>. The project developed and tested a citizen science protocol for using a honeybee colony as a bio-sampler for pesticides in the environment. The outputs of the project are available below.

Insignia project outputs (for general public)

Poster



Insignia poster.pdf

[Download the poster \(PDF\)](#)

Leaflet



Insignia leaflet.pdf

[Download the leaflet \(PDF\)](#)

Guideline



Insignia guideline (for general public).pdf

[Download the guideline for general public \(PDF\)](#)

Insignia project outputs (for experts)

Insignia guideline

The guideline is a handbook with a “rationale” chapter about the possibilities and limitations of the honey bee colony as a bio-monitoring tool, a “study set-up” chapter with comprehensive descriptions of, what was found to be the best practice for this beekeeper citizen scientist studies. The pitfalls and potential “murphy’s law” events are addressed. The chapter “protocols” has a protocol for pesticides and pollen. These protocols are illustrated with icon drawings for their practicality. They have a strict format so that protocols for other subjects like for example microplastics of heavy metals, can be studied in a protocolled way. Finally, the chapter “methods” shows comprehensive descriptions of the 1) pesticide residue analyses, 2) pollen ITS metabarcoding, 3) statistic models for database analyses and 4) background of the temporal land spatial modelling of pesticide exposure risk and pollen diversity availability. Wherever in the guideline, it is relevant, flow charts are presented to picture responsibilities, data flows, and other processes. The bio-monitoring process is depicted in drawings with explanatory text in the guideline.



[Download the guideline \(PDF\)](#)

Insignia protocol.pdf

Other Insignia project outputs

[List of analysed pesticide residues](#) (PDF)

[Insignia scientific publications](#) (zip file)

[Insignia notes to stakeholders](#) (zip file)