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French Phytopharmacovigilance

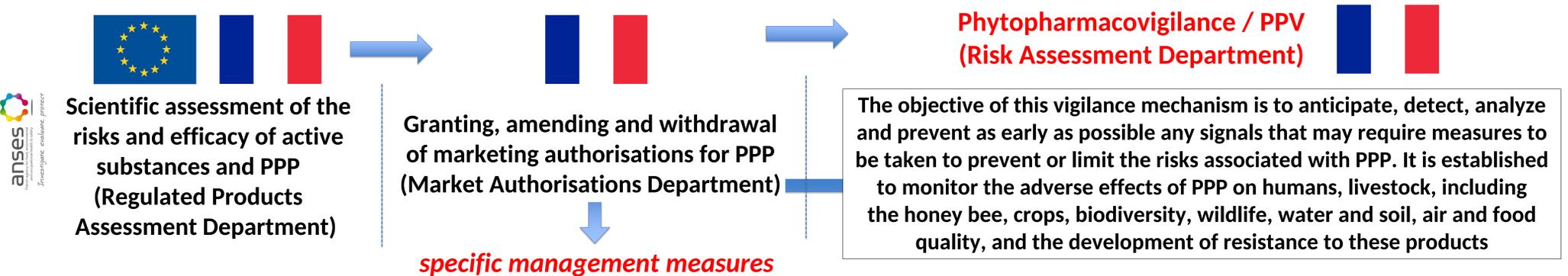
a national scheme for monitoring the adverse effects of plant protection products (PPP)

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Plant protection products can present risks to human health, ecosystems and living organisms that need to be identified in order to be monitored. A recent paper, "Towards pesticidovigilance" published in Science [1] in September 2017 by Dr Alice Milner and Professor Ian Boyd, looks at global pesticide regulation and the lessons to be learned from the regulation and monitoring of pharmaceuticals which could improve environmental sustainability and lead to better risk-based decisions for pesticide safety. The authors suggest to start a discussion about how to introduce a global monitoring programme for pesticides, similar to pharmaceuticals. However, this type of vigilance has already been created in France since 3 years. In the framework of the Act of 13 October 2014 on the future of agriculture, food and forests, ANSES has been entrusted with setting up a Phytopharmacovigilance scheme (listed as PPV in this paper). Phytopharmacovigilance is the latest complement to ANSES's existing missions (*in compliance with the regulation 1107/2009*).



Organization and methods

To identify the adverse effects of plant protection products on biodiversity and ecosystems, Phytopharmacovigilance is based on the systematic and regular collection of information produced by the existing surveillance and vigilance bodies, covering risks and impacts on wildlife, crops, fauna, flora, air, water and soil.

To meet this objective, phytopharmacovigilance relies on three fundamental and complementary methods of data collection and knowledge production:



Ad-hoc studies are financed by PPV to meet three different needs : **1) when the information provided by the surveillance and vigilance bodies is seen to warrant clarification, 2) to investigate spontaneous reports or 3) to collect new data / information.**

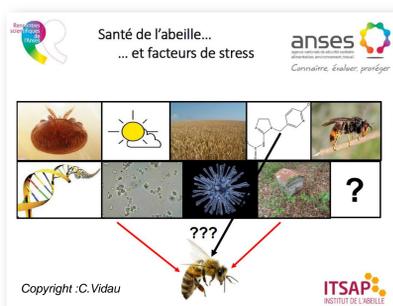
A specific scheme for funding these studies is planned through a tax on sales of plant protection products payable by the marketing authorisation holders.

Pesticides impacts on biodiversity

A participant to this network is for example the national network for the epidemiological surveillance of wildlife, called SAGIR (managed by the *National Hunting and Wildlife Agency*, the ONCFS). SAGIR relies on a generalist incident-based surveillance scheme. It provided field evidences of regular intoxication of wild birds by ingestion of imidacloprid-treated seeds since the put of the market of the substance [2].

It is also important to mention, as part of the PPV scheme, the Ecophyto Biovigilance Network. This French network allows the detection and monitoring of unintended effects of phytosanitary practices through specific biodiversity indicator species (indicators such as population trends of birds, earthworm abundance, diversity of spontaneous flora or observation of beetles are taken into considerations).

Result elaboration are still ongoing. ANSES is also working with one of its partners in biodiversity (ITSAP the *Technical and Scientific Institute of Beekeeping and Pollination*) to build a database to harmonize, organize, store and secure the information generated in the field at the colony scale.

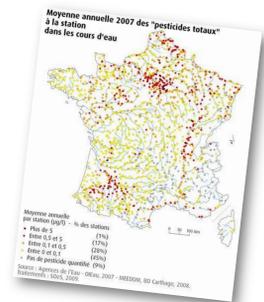


To date, no computer tool of this type existed to collect data generated on environmental variables, health status, and stress factors pressure like contamination of bee related matrices, generated by bee colonies monitoring. Integrative analyses of contamination data is expected with these tools.

In addition, a new project is planned for 2018 : it aims to evaluate the scientific, logistic and financial needs for the implementation of a nationwide bee apiaries reference network. This network should provide the common health status and toxic load of apiaries in different environmental and agricultural contexts.

Monitoring of pesticides (water, air, etc..)

In the case of other compartments such as water, data from thousands of rivers or aquifers across France are available to the public from French Water Agencies WFD monitoring programmes, and are used for PPV. These data are used in Phytopharmacovigilance to assess exposure levels and risk on the basis of available scientific knowledge. These data could also be used to study the association between exposure to pesticides and the biodiversity of aquatic environments.



Data gaps were recently identified and investigations are needed in the area of terrestrial exposure and effects. For example, a panel of european experts recently suggested to increase specific chemical monitoring in order to evaluate the extent of exposure of amphibian populations in the field [3].

As far as concerned soil, an outlined scarcity of data calls for a more systematic monitoring of pesticides under real agricultural practices, similar to the case for surface and groundwater. Recent studies were performed for the first time in European countries (Czech Republic, Greece, Switzerland)[4,5,6] but also at EU level (sampling in >10 countries)[7] . In France, a structure called the *Scientific Group on Soils (GIS Sol)* was created in 2001 to reorganize soil mapping and soil monitoring programmes : this programme could be a useful tool to collect the first data concerning the occurrence and concentrations of pesticides (currently in use) in French soils.



Concerning air monitoring, a first large national screening study is currently taking place in France (1 year duration) to detect around 90 pesticides in ambient air, in collaboration with ATMOFrance (*that encompasses the AASQA network*) and the LCSQA (*Central Laboratory for Air Quality Monitoring*). The results of this programme could be used to assess the chronic exposure of populations.

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