

Study proposal for EUON: information on nano-enabled pesticides & fertilizers

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The following proposal answers the [call for topics](#) launched by the European Union Observatory for Nanomaterials (EUON). The scope of this study would be twofold:

1 - Data on nano-enabled pesticides and fertilizers for agriculture use

Earlier this year, the US Environmental Protection Agency published an analysis¹ of 36,000 patents and 500 peer-reviewed journal articles related to nano-enabled pesticides. Whether they contain nanomaterials as active substances or as carriers and encapsulators, “the next generation of pesticides” has been getting more and more R&D efforts over the years². However, little is known about the current or soon-to-come applications of manufactured nanomaterials in pesticides and fertilizers in Europe as well as on their resulting exposure and impacts to human health and the environment. In France, the R-nano register ranks ‘agriculture’ as the first “sector of use” but no data is available on the related tonnage or nanomaterials³. This first part could thus be dedicated to collecting, analysing and organizing information on nano-enabled pesticides and fertilizers for agriculture use, by considering for example:

- R&D projects on nanomaterials in pesticides and fertilizers (in particular the projects benefiting from European public funding, and/or involving companies selling nanomaterials on the EU territory)
- the different kinds of nano-scale formulations and the patents applied for and granted,
- the actual products and quantities marketed in the EU, and the companies commercializing them.

This may be achieved by combining different means of information collection: company and user surveys, administrative sources, etc.

2 - Recommendations to improve information on nano-enabled pesticides and fertilizers

Drawing upon the findings of Part I, the second part of the study could, among others, allow for:

- the identification of European data and research projects on potential safety concerns associated with nano-enabled pesticides and fertilizers.
- the evaluation and discussion of the adequacy of the current tools and regulatory framework to ensure the identification and safety of these substances and products.
- the elaboration of recommendations on the different ways to improve the quantity and quality of information regarding nano-enabled pesticides and fertilizers, both from a technical standpoint (e.g nano-sensors to detect nanopesticides for example, other solutions?) and from a legal perspective.

The aim would be to:

- increase the delivery of accurate and reliable information on nanopesticides and fertilizers, allowing authorities to achieve better risk assessments (characterization of the nano active substances / carriers / encapsulators / ... in evaluation dossiers submitted to EFSA for example).
- deliver thorough and publicly accessible information on the properties and hazards of authorised nano-enabled substances and mixtures, on the involved quantities and affected areas. This may take the form of new nano labelling, nano-related information in Safety Data Sheets, a new public database, ... Necessary revision of existing legislations or the adoption of non-legislative acts would need to be explored for these changes to become effective, including the adoption of non-legislative acts in the implementation of the new regulation on statistics on agricultural input and output.

Addressing this specific knowledge gap, would, in the end, allow for better information and protection of workers and operators throughout the whole supply chain, and also of residents and bystanders who are exposed to those nanomaterials.

¹ <https://www.epa.gov/sciencematters/advancing-epas-understanding-next-generation-pesticides>

² Nature Nanotechnology, “[The rise of nanoagrochemicals](#)”, October 2021

³ <https://www.r-nano.fr>