The relevance of creating a methodical base of the environmental monitoring national system based on international approaches as a basis for preserving public health

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ABSTRACT

Introduction: Environmental monitoring of pesticides is a crucial component of efficient agricultural practices and environmental protection. Pesticide formulations are designed to control a specific pest, but unintended consequences for beneficial insects, birds, aquatic organisms (non-target species) can be significant. Ecological and biological monitoring aims to understand these ecological interactions and mitigate potential threats to biodiversity. Different countries and regions, including the European Union (EU), use different monitoring strategies. Monitoring of pesticides non-target effects is a critically important aspect of environmental management and public health in Ukraine and the world.

Aim: Assessment of the relevance of creating a methodical base of the environmental monitoring national system based on international approaches as a basis for preserving public health.

Materials and Methods: The following information sources were for analysis: domestic and European regulatory documents and methodological recommendations. We used the methods of empirical and theoretical research of scientific information, namely analysis, synthesis, induction, deduction and systematization.

Results: Currently, Ukraine is at the initial stage of integration of the state system of environmental assessment and monitoring of non-target effects of pesticides with European approaches. State toxicological and hygienic examination of pesticides is carried out by accredited research institutions. The State Food Safety and Consumer Protection Service of Ukraine plays a key role in overseeing pesticide monitoring activities. There is a large scientific and regulatory base for conducting toxicological and hygienic examination and control of pesticides, a system of organizations for study, pre-registration tests and post-registration monitoring is functioning.

For ecological and hygienic monitoring, everything is limited to a pre-registration assessment. Ukrainian research institutions, such as the Plant Protection Institute of the National Academy of Agrarian Sciences and other accredited scientific institutions, conduct research on the environmental impact of pesticides on non-target organisms, providing valuable data for regulatory decisions. However, post-registration assessment, control and monitoring are actually not provided for. Only in cases of emergency, such as bee poisoning, etc., research is conducted. But they are, of course, one-time and do not give an idea about the circulation of a certain pesticide in the environment or the long-term, cumulative effect on non-target species.

In the EU, USA and other countries, there are approaches to post-registration studies: studying the dynamics of the pesticides active ingredients concentrations in water, soil, air, plants; study of residues in insects, soil organisms; observation of the behavior and state of health of birds, fish, aquatic invertebrates, non-target insects, etc., which live in areas of active agricultural production using chemical plant protection technologies.

These approaches, with appropriate modification to domestic conditions, must be integrated into the Ukrainian system of ecological and hygienic assessment and monitoring.

Conclusions: It is important to implement in Ukraine world-class approaches to post-registration ecological and hygienic monitoring and control, to prevent the accumulation of pesticides, the remote consequences of their impact on the ecosystem, and subsequently on human health, the possibility of timely response to changes in the state of animal, bird, and insect populations, the state of the water, soil and air environment.

KEY WORDS: Ecological monitoring, pesticides, population health