ACCREDITATION OF LABORATORY PROCEDURES FOR MACROINVERTEBRATES AS BIOINDICATORS OF WATER QUALITY IN AGRICULTURAL CATCHMENTS

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INTRODUCTION

RALACA (Latin American and Caribbean Analytical Net), with the kind assistance of the International Atomic Energy Agency (IAEA), is a non-profit network of laboratories and associated institutions that brings together analytical laboratories to enhance regional capabilities to target food safety and environmental sustainability.

The Biomonitoring Committee, a subset of RALACA, was created with the objective of developing laboratory capacities for the execution, analysis, and dissemination of water quality biomonitoring protocols, through the use of aquatic macroinvertebrate assemblages, contributing to the incorporation of biological criteria for evaluating the effects of pesticide use in watersheds composed of agricultural lands.

ACTIVITIES

Within the framework of the ARCAL projects (Regional Cooperation Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean), some countries in the region began to apply biomonitoring with macroinvertebrates, establishing protocols and procedures for sampling and analysis, which includes physicochemical and biological parameters, validating biotic indexes adapted to local river catchments (Ruiz-Picos et al., 2017) and developing taxonomic identification guides.

BIOMONITORING COMMITTEE

Agricultural catchments

Aquatic macroinvertebrate biomonitoring

Accreditation of the sampling tests and analysis of macroinvertebrates (ISO 17025: 2005)

Within this context, it is essential that laboratories can assure the technical competence of the people who carry out, both the sampling and the macroinvertebrate identification, by securing the reliability of the result based on a Quality Management System (QMS) that demonstrates repeatability, traceability, and promotes rigor in the generation of results, together with continuous improvement practices for the quality of research and/or services provided.

During a workshop held in Panama City this year under the ARCAL 7019 project, laboratories from Argentina, Chile, Costa Rica, Ecuador, Guatemala, Panama, and Uruguay, under the tutelage of the Mexican Institute of Water Technology (IMTA), developed the procedures required for the accreditation of the sampling tests and analysis of macroinvertebrates as bioindicators of health and ecological integrity of river catchments for agricultural use, as established by the QMS procedures of each of the laboratories of the participating countries, protocols governed by ISO 17025: 2005 "General requirements for the competence of testing and calibration laboratories", in order to ensure the competence and integrity of the services operating under a quality management system.

References

Ruiz-Picos, R. A., Kohlmann, B., Sedeño-Díaz, J. E. & López-López, E. (2017). Assessing ecological impairments in Neotropical rivers of Mexico: calibration and validation of the Biomonitoring Working Party Index. International Journal of Environmental Science and Technology, 1-18. DOI: 10.1007/s13762-017-1299-x

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