12TH U.S. SYMPOSIUM ON HARMFUL ALGAE

RESEARCH AND DEVELOPMENT OF REFERENCE MATERIALS FOR CYANOBACTERIAL TOXINS AT NRCC

SESSION: POSTER SESSION, WEDNESDAY

ABSTRACT: The limited availability of cyanotoxin certified reference materials (CRMs) has been a barrier to the development and validation of methods required to support cyanotoxin regulation and monitoring programs. Traceable CRMs prepared in compliance with laboratory testing quality standards (e.g. ISO 17025) ensure comparability between measurements carried out at different times or in different laboratories. A good understanding of the chemistry and stability of the toxins is required to produce CRMs that are fit-for-purpose. The large number of toxin variants within each cyanotoxin class makes this a significant challenge.
The National Research Council of Canada (NRCC) has produced a number of publicly-available cyanotoxin CRMs including microcystins (MC-LR, [Dha7]MC-LR, MC-RR, MC LA), nodularin, cylindrospermopsin, anatoxin-a, lyngbyatoxin, as well as several saxitoxins. New CRM projects are selected to expand the range of CRMs available for the analogs that are relevant in the environment. Recent efforts have been focused on the preparation of calibration solution CRMs for homoanatoxin-a (hATX-a), [Leu1]MC-LY and MC-YR. These CRMs play a vital role in the characterization of dietary supplement matrix CRMs recently prepared using the non-toxic cyanobacteria Aphanizomenon flos-aquae (Cyano A), and Aphanizomenon flos-aquae blended with a variety of cultured cyanobacterial species that produce cyanotoxins (Cyano-T).
A summary will be provided on the production of cyanotoxin CRMs at NRCC, outlining key steps in their preparation including algal culturing, toxin isolation, CRM preparation, stability testing, and accurate quantitation. Certified values for these materials are assigned providing traceability to the International System of Units (SI).

SPEAKER: **Pearse McCarron, National Research Council of Canada | 1411 Oxford St**

SPEAKER BIO: Pearse McCarron obtained a PhD from University College Dublin (Ireland) and took up a research position at the National Research Council of Canada (NRCC) in 2008. Pearse has been leading the Biotoxin Metrology group at the NRCC for almost 10 years with a primary research focus on understand the chemistry of algal and cyanobacterial toxins, development of chemical analytical methods, and production of reference materials.

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