Development of Shrimp Reference Material for Radioactivity Measurement and Its Application in Proficiency Test

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Environmental radioactivity monitoring, particularly the measurement of Caesium isotopes (¹³⁷Cs and ¹³⁴Cs), plays a critical role in assessing the safety of the environment and public health, especially in the aftermath of nuclear incidents like the Fukushima Daiichi disaster. To ensure the accuracy and reliability of radioactivity measurements, the use of **Certified Reference Materials (CRMs)** or **Reference Materials (RMs)** is essential for **quality assurance (QA)** and **quality control (QC)**. These materials provide known massic concentrations of radionuclides and serve as benchmarks for calibrating instruments and validating analytical methods.

Proficiency test is crucial for verifying laboratory competence and ensuring consistent, accurate results across different laboratories. It allows for the detection and correction of systematic errors, the optimization of measurement techniques, and compliance with international safety standards. Furthermore, the use of RMs in proficiency tests ensures that data on environmental radioactivity, such as that in seafood like shrimp, meets regulatory requirements and supports public health protection. As part of this research, KRISS has recently developed a shrimp RM.

In this presentation, we will discuss the importance of using CRMs and RMs, particularly in proficiency testing, for environmental radioactivity monitoring. We aim to highlight how these materials enhance the reliability of data and contribute to long-term monitoring efforts, ensuring the safety of ecosystems and seafood products after events like the Fukushima accident.