

ICAR-CIFRI, Barrackpore

The ICAR- central Inland Fisheries Research Institute (ICAR-CIFRI) is a premier institute in India that has made remarkable contribution to the inland fisheries sector. The institute has conducted benchmark studies on the inland fisheries resources viz. rivers, estuaries, lakes, reservoirs and wetlands across the country. Since its foundation, the institute has worked relentlessly for knowledge based management of inland open waters for sustainable fisheries and conservation of aquatic biodiversity.

Background

Pollution is a significant environmental concern with potentially harmful consequences for the ecosystems, plant, animal and human health. Heavy metals are naturally occurring elements that are present in soils and sediments and are also added through different anthropogenic activities. Water bodies are the ultimate recipients of different polluting substances including metals. Metals in the water and sediments are bioconcentrated and bioaccumulated in different aquatic organisms including fish. Similarly, from agricultural soils and irrigation water the metals are transferred to the crops and thus contaminate the food chain. Common heavy metals of concern in different environments include lead (Pb), cadmium (Cd), arsenic (As), chromium (Cr), and others. Monitoring heavy metals precisely at trace levels is thus a critical aspect of environmental monitoring, protection and food safety assessment. For effective analysis of heavy metals, a combination of methods and techniques is employed. The aim of this training programme is to enhance the current understanding in heavy metal pollution in inland open waters and its analysis using ICP-MS.

Environmental pollution with plastic debris, more specifically microplastics (MP), has become an emerging threat to the viability and sustainability of various terrestrial and aquatic ecosystems and well reported in riverine, coastal and marine ecosystems across the globe. MPs are reported to be synthetic polymers (like fragment, fibre, pellet, film, bead or foam), in the size range 100 μm – 5 mm, which are directly/indirectly introduced into the environment through anthropogenic activities or derived from bigger plastic particles through environmental degradation process. Hence the training programme also aims to enhance the current understanding about microplastic pollution in environment and its analysis using μFTIR .

Objectives:

1. To upgrade the current knowledge on heavy metal and microplastics contamination in environment with special emphasis in aquatic ecosystem.
2. To provide hands on training on heavy metal and microplastics analysis using ICP-MS and μFTIR , respectively.

Aim of Training:

Trainee will gain basic knowledge and skills needed for optimization and troubleshooting for analysis of heavy metals and microplastics using ICP-MS and μFTIR , respectively. Laboratory exercises include experiments in controlling interferences, as well as procedures for developing methods. The training is useful for those who are planning to pursue their career in field of Research, Pharmaceuticals, Water Testing, as well as the Analytical Testing Laboratories and various others.

Modules

- Basic Principles of ICP-MS and μFTIR
- Components of an ICP-MS and μFTIR
- Matrix Modification & Interferences
- Preparation of standard heavy metal solutions
- Sample preparation for soil, plant, fish etc. for determination of heavy metals and microplastics
- Determination of heavy metals and microplastics in food, fish, water and soil/sediment samples
- Instrumentation
- Method development
- Routine maintenance and troubleshooting
- Calculation and interpretation (Indexing)
- Hands on session

Who can Apply:

Researchers, Academician, Students, Engineers, State Govt. Employees

Registration Fee:

Rs. 3000/- (Rupees Three thousand only) (50% discounts for students)
(TA boarding/lodging would have to be borne by the candidates themselves)

Mode of Payment:

The course fee can be paid through online transfer as given below or Demand Draft in favour of "ICAR Unit CIFRI, Barrackpore", payable at SBI, Barrackpore, Kolkata - 700120;

SBI A/c. No: 11278713220; Name: ICAR Unit CIFRI, Barrackpore; IFSI Code:SBIN0000029