IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Interregional Training Course on Harmonized Microplastic Monitoring Using Nuclear and Related Techniques

Project INT7021

" Contributing to the Global Monitoring of Marine Plastic Pollution under the IAEA NUclear TEChnology for Controlling Plastic Pollution (NUTEC Plastics) Initiative"

Hosted by

INVEMAR
Santa Marta, COLOMBIA

01-19 March 2027

Ref. No.: ME-INT7021- EVT2604820

Information Sheet

Purpose

The purpose of the course is to train participants on how to design and implement harmonized programmes for monitoring microplastic pollution in marine and coastal ecosystems.

Working Language(s)

The working language(s) of the event will be English.

Deadline for Nominations

Nominations received after 09 November 2026 will not be considered.

Project Background

The marine component of the IAEA NUTEC Plastics initiative aims to develop and mainstream the contribution of nuclear technology to the knowledge on sources, distribution, trends, transport, bioaccumulation, and the impacts of micro and nano plastics in the marine environment. The project INT7021" Contributing to the Global Monitoring of Marine Plastic Pollution under the IAEA NUclear TEChnology for Controlling Plastic Pollution (NUTEC Plastics) Initiative" was approved for the period 2024-2027 to support Member States in integrating nuclear techniques in their efforts to address challenges of marine plastic pollution. This interregional project will contribute to build capacities in a network of laboratories around the world to monitor microplastics abundance and trends through agreed protocols, exchange of data, knowledge, and best practices in this area.

Expected Outputs

1. **A trained group of specialists in harmonized microplastic monitoring.** Specialists from approximately 60 institutions and laboratories participating in the NUTEC Plastics Global Network of Laboratories will have completed theoretical and practical training covering the full monitoring workflow, from sampling design to laboratory analysis and data reporting for beach sand and surface waters.
2. **Harmonized microplastic monitoring and field-sampling plans.** Participants, working individually or in country groups, will have prepared draft monitoring plans incorporating representative site selection, sampling frequency, environmental replication, metadata requirements, QA/QC measures, and the harmonized protocols for sampling beach sand and surface seawater using a manta net.
3. **Demonstrated competence in laboratory processing and analytical identification.** Participants will have applied standardized procedures for sample reception, contamination control, preparation, separation, recovery and classification of suspected microplastic particles, and will have gained practical experience in polymer identification and chemical characterization using ATR-FTIR. They will also have completed an exercise on the interpretation of Pb-210 sediment chronologies for reconstructing historical trends in microplastic contamination.
4. **Quality-assured and harmonized microplastic datasets.** Participants will have generated, calculated, validated and reported microplastic monitoring results using the agreed units, quality criteria and metadata requirements, and will have completed a practical exercise involving the formatting and submission of data to the NUTEC Plastics Data Platform.

5. **Institutional implementation and knowledge-transfer plans.** Participating institutions or country groups will have prepared follow-up plans describing how the harmonized protocols, analytical workflows, QA/QC procedures and data-reporting practices will be implemented and disseminated within their laboratories, national monitoring programmes and regional networks.

Scope and Nature of the Course

The course will cover the complete harmonized workflow for monitoring microplastics in beach sand and surface waters, from the design and implementation of field-sampling strategies to laboratory analysis, polymer identification, data reporting and submission to the NUTEC Plastics Marine Monitoring Database.

The course will be organized into two complementary modules, as described below.

- **Module 1**: **Monitoring Strategy and Implementation of Field Sampling Protocols — Week 1 (01-05 March 2027)**

The first module will focus on the design of representative microplastic monitoring strategies and the practical implementation of the harmonized NUTEC Plastics field-sampling protocols. It will combine theoretical sessions with hands-on field activities covering:

- Definition of monitoring objectives and development of sampling strategies;
- Selection of representative monitoring sites;
- Sampling frequency, spatial coverage and environmental replication;
- Collection and documentation of the required field metadata;
- Quality assurance and quality control during field activities;
- Harmonized sampling of microplastics in beach sand;
- Harmonized sampling of microplastics in surface seawater using a manta net;
- Calculation of the area sampled and the volume of water filtered;
- Sample identification, labelling, preservation, storage and transportation to the laboratory; and
- Preparation and use of field records, checklists and chain-of-custody documentation.

- **Module 2: Laboratory Analysis, Polymer Characterization and Data Reporting — Weeks 2 and 3 (08-19 March 2027)**

The second module will focus on the analytical workflow required to process, separate, identify and characterize microplastics collected during field monitoring. It will include theoretical and practical laboratory activities covering:

- Laboratory contamination prevention and QA/QC procedures;
- Reception, registration and traceability of samples;
- Sample preparation and pretreatment;
- Separation, recovery, filtration and visual classification of suspected microplastic particles;
- Chemical characterization and polymer identification using ATR-FTIR;
- Instrument operation, sample placement and acquisition of infrared spectra;

- Use of spectral libraries and interpretation of results;
- Quality criteria for accepting or rejecting polymer identifications;
- Calculation, validation and expression of microplastic monitoring results;
- Preparation of harmonized analytical and monitoring reports; and
- Formatting, validation and uploading of results and associated metadata to the NUTEC Plastics Data Platform.

A dedicated session within the second module will address the use of Pb-210 sediment dating to establish sediment chronologies and reconstruct historical trends in microplastic contamination. This nuclear application will complement the core monitoring and analytical activities by linking present-day observations with the temporal evolution of microplastic pollution.

Participation

This event is open to Member States participating in the interregional technical cooperation project INT7021 and with at least one national institution registered at the NUTEC Global Marine Monitoring Platform. Recognizing that field sampling and laboratory analysis may be performed by different specialists within national institutions, each Member State may use one of the **following nomination arrangement options**:

1. **One candidate for the full course**: The Member State may nominate one candidate to attend both modules and participate in the full three-week course. This candidate must meet the profile requirements established for both the field and laboratory components.
2. **One candidate for each module**: The Member State may nominate up to two different candidates:
    - One candidate to attend Module 1: Monitoring Strategy and Implementation of Field-Sampling Protocols, during the first week; and
    - One candidate to attend Module 2: Laboratory Analysis, Polymer Characterization and Data Reporting, during the second and third weeks.

When different candidates are nominated for the two modules, the nominating institution must ensure effective coordination and transfer of information between them. The monitoring design, field records, sampling metadata and sample-handling procedures covered during Module 1 must be communicated to the participant attending Module 2 to maintain continuity across the complete monitoring workflow.

In addition to submitting their application through the InTouch+ platform, all applicants should submit the Microsoft Form available in the link below.

Project INT7021 - EVT2604820 - Additional Information Form – Fill in form

The final selection of participants will be subject to the relevance of their professional responsibilities, compliance with the required profile and the availability of places.

Participant Profile

Nominated participants should meet the following requirements:

1. Have an assigned role for submission of data on the NUTEC Plastics Global Marine Monitoring Platform.
2. Have academic qualifications in environmental sciences, oceanography, chemistry, analytical chemistry, marine biology or another relevant discipline.
3. Have demonstrated experience in, or direct professional responsibility for, monitoring or analysing microplastics in marine and coastal environments.

4. Be actively involved, or expected to become directly involved, in the implementation of the harmonized NUTEC Plastics monitoring protocols and the generation or reporting of marine microplastic data within their respective institutions.
5. Candidates nominated for **Module 1** should be directly involved in one or more of the following activities:
    a. Design of marine environmental monitoring programmes;
    b. Selection of monitoring sites and development of sampling strategies;
    c. Collection of beach-sand or surface-water samples;
    d. Operation of manta nets and related field equipment;
    e. Collection and management of environmental and sampling metadata;
    f. Field QA/QC, sample documentation, preservation, storage or transportation.
6. Candidates nominated for **Module 2** should be directly involved in one or more of the following activities:
    a. Laboratory reception, registration and traceability of environmental samples;
    b. Sample preparation and pretreatment;
    c. Separation, recovery and classification of suspected microplastic particles;
    d. ATR-FTIR analysis and polymer identification;
    e. Laboratory QA/QC and contamination control;
    f. Data processing, validation and harmonized reporting;
    g. Management and submission of microplastic data to the NUTEC Plastics Data Platform.
7. Candidates nominated for both Modules must have responsibilities covering both the field and laboratory components or occupy a coordinating role in the implementation of the complete microplastic monitoring workflow within their institution.
8. Have sufficient proficiency in English to follow technical presentations, participate actively in field and laboratory exercises, contribute to group discussions and complete the course assignments.
9. Have the institutional support and ability to transfer the knowledge and procedures acquired during the course to colleagues, national monitoring programmes and relevant laboratory networks.

Geographical and gender balance across the participating regions will be taken into consideration during the selection process.

The candidates' relevant experience, current responsibilities and intended role in implementing the course content must be clearly described in the **Work Description** section of the nomination. The requested module or modules for participation must also be specified. A copy of the candidate's abbreviated CV and they should be submitted as part of the nomination process.

Application Procedure

Candidates wishing to apply for this event should follow the steps below:

1. Access the InTouch+ home page (https://intouchplus.iaea.org) using the candidate's existing Nucleus username and password. If the candidate is not a registered Nucleus user, she/he must create a Nucleus account (https://websso.iaea.org/IM/UserRegistrationPage.aspx) before proceeding with the event application process below.

2. On the InTouch + platform, the candidate must:
    a. Finalize or update her/his personal details, provide sufficient information to establish the required qualifications regarding education, language skills and work experience ('Profile' tab) and upload relevant supporting documents;
    b. Download and complete the Designation of Beneficiary and Emergency Contact Form, and upload to InTouch+ ('Profile' tab under the personal section) specifying the document name. If already provided, kindly discard this step; and
    c. Search for the relevant technical cooperation event **(EVT2604820**) under the 'My Eligible Events' tab, answer the mandatory questions and lastly submit the application to the required authority.

3. In addition to submitting their application through the InTouch+ platform, all applicants should submit the Microsoft Form available in the link below.

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NOTE: Completed applications need to be approved by the relevant national authority, i.e. the National Liaison Office, and submitted to the IAEA through the established official channels by the provided designation deadline.

For additional support on how to apply for an event, please refer to the InTouch+ Help page. Any issues or queries related to InTouch+ can be addressed to InTouchPlus.Contact-Point@iaea.org.

Should online application submission not be possible, candidates may download the nomination form for the meeting from the IAEA website.

NOTE: A medical certificate signed by a registered medical practitioner dated not more than four months prior to starting date of the event must be submitted by candidates when applying for a) events with a duration exceeding one month, and/or b) all candidates over the age of 65 regardless of the event duration.

Administrative and Financial Arrangements

Nominating authorities will be informed in due course of the names of the candidates who have been selected and will at that time be informed of the procedure to be followed with regard to administrative and financial matters.

Disclaimer of Liability

The organizers of the event do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability or death of a participant while he/she is travelling to and from or attending the course, and it is clearly understood that each Government, in approving his/her participation, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.

Note for female participants

Any woman engaged by the IAEA for work or training should notify the IAEA on becoming aware that she is pregnant.

The Board of Governors of the IAEA approved new International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources. The Standards deal specifically with the occupational exposure conditions of female workers by requiring, inter alia, that a female worker should, on becoming aware that she is pregnant, notify her employer in order that her working conditions may be modified, if necessary. This notification shall not be considered a reason to exclude her from work; however, her working conditions, with respect to occupational exposure shall be adapted with a view to ensuring that her embryo or foetus be afforded the same broad level of protection as required for members of the public.

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