

***IAEA Technical Meeting on  
Future Trends for Stable Isotope Reference Materials***

**18 – 21 October 2010**

**IAEA Headquarters, Vienna**

**Austria**

**ANNOUNCEMENT**

**BACKGROUND**

Measurements of the variations of the abundance of isotopes of an element have been used for over 60 years in various scientific disciplines. These so called stable isotope techniques have in common the feature that the isotopic variations expressed as isotope ratios (e.g.  $^{18}\text{O}/^{16}\text{O}$ ) are quite small, in most cases varying only by few per mille. Special high precision measurements are based mainly on mass spectrometric techniques, nowadays complemented by infrared laser absorption techniques. In order to achieve the required high precision, special methods are needed to ensure a proper calibration of measurements. In many cases, the isotope ratio of a selected natural material has been defined as the primary calibration point, and the isotopic ratios of all other materials expressed as relative deviations from that of the calibration material, creating a so called  $\delta$ -scale. Those calibration materials are supplemented by other reference materials with different isotopic composition or of different matrix to improve calibrations for as many compounds as possible.

Special care is necessary when calibration materials approach exhaustion. Since the definition of  $\delta$ -scales depends on these materials, replacements have to be carefully calibrated in order to maintain the scale as unaffected as possible, to maintain comparability between measurements and to limit any increase of calibration uncertainty.

Suitable reference materials have to fulfil several criteria: chemical stability, isotopic homogeneity at the sub-milligram level, availability of similar materials in different isotopic ratios to ensure a proper normalisation, similar preparation steps and reactions as the samples to be analyzed, and ease of use.

In September 2000 an international expert meeting was held in Vienna to advise the IAEA on issues related to stable isotope reference materials. Many of the recommendations from that meeting were tackled in later years on an international basis in cooperation with leading scientists working in these fields.

This Technical Meeting is a follow-up to the 2000 meeting and its predecessor meetings held in 1998 and 1995. The Technical Meeting should bring together scientists and engineers who are involved in one or more of the following:

- Development of calibration methods for stable isotope measurements.

- Development and/or use of new stable isotope analytical methods for scientific applications.
- Experience in stable isotope reference materials.
- Interest in highly accurate calibration of the isotopic composition of reference materials.

A major focus of the meeting will be on identification of the most important new reference materials and on needs for re-calibration of existing reference materials for environmental and other scientific applications. Action steps for the needed replacement of the exhausting NBS19 as carbon calibration material should be discussed. Previously performed re-calibrations of reference materials should be discussed in view of further similar activities. Improvements in these areas should be made with the aim of improving the international cooperation in this field by all those developing and using stable isotope reference materials.

## OBJECTIVES

- 1) To discuss and review the existing situation concerning available stable isotope reference materials and their international supply in view of the needs of the scientific communities, including necessary steps to ensure continuity of supply for critical materials used to calibrate  $\delta$ -scale measurements as in case of the  $\delta^{13}\text{C}$ -scale.
- 2) To discuss and review proposals and approaches to improve the internationally available supply for stable isotope reference materials and to prepare priority lists for most needed new materials for emerging scientific disciplines and instrumentation.
- 3) To discuss and review the calibration/ re-calibration of 30 IAEA reference materials performed since the last IAEA Advisory Group meeting on stable isotope reference materials in the year 2000.
- 4) To advise the IAEA on important priority tasks for the next years for concerned scientific communities in need for advanced stable isotope reference materials.

## PARTICIPATION

A person will be eligible to participate only if nominated by the Government of an IAEA Member State (Ministry of Foreign Affairs or National Atomic Energy Authority) or by an Organisation invited to participate. Nomination for participation (Form A) should be received by the IAEA not later than **30 July 2010**. The participants should be scientists or engineers dealing with stable isotope measurements and applications, preferentially with sound experience in production or use of stable isotope reference materials. *A contribution from the participant in the form of a short abstract covering his/her work relevant to the objectives of the meeting will be necessary for consideration for participation.*

## FINANCIAL SUPPORT

As a general rule, the IAEA does not pay the costs for attendance to the meeting. However, limited funds may be made available to assist the attendance of selected participants and approved in accordance with the current Agency rules and regulations. Generally, not more than one financial grant will be awarded to a Member State. If Governments wish to apply for financial support on behalf of their nominees, they should address specific requests to the IAEA Scientific Secretary.

## MEETING FORMAT

To facilitate proceedings, participants are invited to contribute an oral presentation on a subject relevant to the scope and objectives of this meeting. Participants should submit an abstract of their proposed presentation along with their nomination. The official language of the meeting is English. No interpretation will be provided. It is expected that the meeting will start at 09:00 on Monday, 18th October 2010 and conclude by 16:00 on Thursday 21st October 2010.

The outputs of discussions will be recorded for possible dissemination to Member States as an IAEA technical publication. Contributors of material to be included in the Agency proceedings are required to assign all copyrights or rights to publish to the Agency. Please complete and sign the Form B and send it to the IAEA Scientific Secretary by post or email. The authors should ensure that material they make available for possible publication by the IAEA does not include copyrighted material or other impediments for reproduction.

## LOCAL ARRANGEMENTS

It is the responsibility of all participants to make their own travel arrangements to/from Austria. Detailed information on accommodation, local transport to/from the meeting venue, and other organisational details, will be sent to all designated participants well in advance of the meeting.

## VISA

Designated participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria well in advance of entry. An official letter of invitation will be issued to all designated participants by the IAEA Scientific Secretary.

## DEADLINES

- **30 July 2010:** Submittal of requests to the IAEA for participation and financial support close
- **6 August 2010:** Participants informed of their acceptance of participation, and decision on request for financial support.

## IAEA SCIENTIFIC SECRETARY

Mr Paul Martin

IAEA Environment Laboratories

Department of Nuclear Sciences and Applications

International Atomic Energy Agency

Wagramer Strasse 5, P.O.Box 100

A-1400 Vienna, Austria

Tel: +431 2600 28237

Fax: +431 2600 28222

E-mail: [p.martin@iaea.org](mailto:p.martin@iaea.org)