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Nutritional & Health-Related Environmental Studies Newsletter

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Contents

To Our Readers

Summer greetings from Vienna!

It's time for the next update on our activities! You can read about workshops at our Collaborating Centre in Bangalore, India, our participation in the European Development Days, the success story from Haiti, training efforts and strengthening our quality assurance framework for the use of isotope techniques. Don't miss the information on a new research project, our new eLearning modules and a new publication summarizing the use of stable isotope techniques in nutrition assessments. We are also happy to have – for the first time – contributions from colleagues outside our section! Have a look at the article on our new IAEA website and the special contribution from the UNSCN Secretariat.

We had to let go our intern Carolin and welcome Bianca who joined in time to put this newsletter together!

If you attend the IUNS 21st ICN in Argentina this coming October, don't miss our symposia – please see details on page 4! Last but not least, we are thinking of organizing webinars on the application of the different stable isotope techniques and would like to hear from you if this is of interest! Please give us your opinion (details on page 6).

Best wishes,

Cornelia

Cornelia Loechl, NAHRES Section Head, during a visit of the IAEA Collaborating Centre for Nutrition (Photo courtesy of St. John's Research Institute)

Meetings

Introductory Workshop on the application of stable isotope techniques in nutrition held in Bangalore

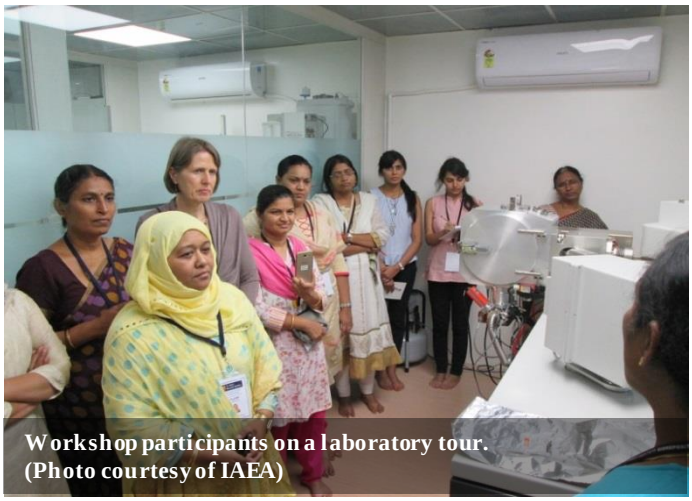
Researchers, professors and PhD students from universities and institutions all over India, Sri Lanka, Bangladesh and Indonesia gathered at the IAEA Collaborating Centre for Nutrition at St John's Research Institute, Bangalore for a two-day workshop on 12-13 June. This was to discuss the role of stable isotope techniques in nutrition on how to inform nutrition policies and programmes. They benefitted from the experience of St. John's Research Institute with a wide range of stable isotope techniques. This training will help them to start using stable isotopes in their nutrition-related research and answer questions related to nutrients, body composition and energy expenditure.

The workshop was opened by Professor Anura Kurpad, Head of the Physiology Department and of the Nutrition Division at St. John's Research Institute, who illustrated how stable isotope techniques can be used to inform public health nutrition.

"Stable isotope techniques are best used for strategizing nutrition interventions and validating simpler techniques."

IAEA's Head of the Nutrition Section, Cornelia Loechl, provided an overview of IAEA's sub-programme in nutrition and its role in nutrition programmes. Researchers of the collaborating centre presented details on the use of stable isotopes to assess body composition, breastfeeding patterns, energy expenditure, iron bioavailability, and vitamin A status.

The meeting participants in front of the Collaborating Centre. (Photo courtesy of St John's Research Institute)


Workshop participants on a laboratory tour. (Photo courtesy of IAEA)

Tom Preston, Professor of Stable Isotope Biochemistry at Scottish Universities Environmental Research Centre in Glasgow, UK, who is affiliated with St. John's Research Institute, presented the principle and use of different Carbon-13 breath tests to measure for example liver function, *Helicobacter pylori* infection, or gut function in the context of environmental enteric dysfunction.

The organization of the workshop was part of the Collaborating Centre's outreach and capacity building activities.

More information can be found here!

Workshop on Quality Control in Anthropometric Assessment

The Collaborating Centre also hosted a workshop on anthropometrical measurements. Researchers from India, Sri Lanka and Australia involved in a Doctoral Coordinated Research Project (CRP) on 'Longitudinal Measures of Body Composition of Healthy Infants and Young Children up to two years of Age Using Stable Isotope Techniques' took part in this week long training meeting in April 2017 which aimed to ensure the quality of anthropometric data being collected in the CRP.

The course followed a 3-stage standardization exercise model to ensure trainees were proficient in anthropometric measurements. After a productive week the trainees are expected to transfer this know-how to their respective teams and continue to perform periodic standardization exercises to monitor the quality of anthropometric measurements in this study.

European Development Days 2017: showcasing the role of nuclear science

Brussels, the European Union capital and the home of the iconic 'Atomium', hosted the 11th edition of the European Development Days (EDD) organized by the European Commission from 7-8 June 2017. About 6000 participants and over 75 exhibitors showcased how their activities drive global development.

The 'Atoms for Peace and Development' theme exhibited at the IAEA stand blended harmoniously with the majestic aura of the Atomium. Visitors to the stand were told of the success stories on the prevention of childhood obesity in Latin America based on body composition and physical activity data generated using stable isotope techniques. Around 18% of children and adolescents in the Latin America region are overweight or obese, often as a result of physical inactivity and transitioning diets.

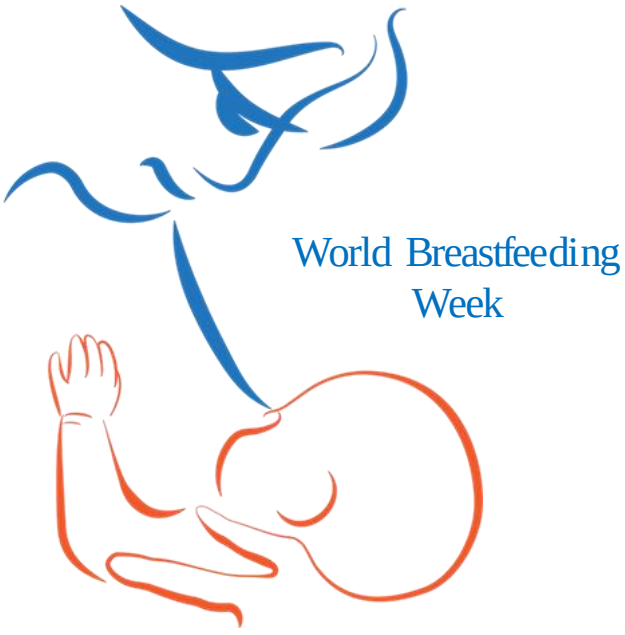
NAHRES' staff showcasing how to measure body composition at the EDD 2017. (Photo courtesy of IAEA)

Measuring the amount of body fat enables classification of individuals as normal, overweight or obese. Body mass index generated from weight and height measurements is a misleading way to characterise individuals as obese or not as it may, for example, misclassify a weight lifter as obese. So among other known alternatives, skinfold callipers can be used to measure 'fat folds' on different body sites and estimate body fat based on complex mathematical and logarithmic transformations. This requires training to standardize measurements and often leads to inaccurate data of body fatness. The solution lies in the accuracy and non-invasive nature of a stable isotope technique known as deuterium oxide dilution.

The procedures for measuring body fat by deuterium dilution and using a skinfold calliper were on display. IAEA stand patrons were shown how a portable field-friendly infrared based spectrometer is used to measure deuterium enrichment in saliva samples, which are collected before and after an individual receives an oral dose of deuterium oxide. Deuterium enrichment in saliva is mathematically converted into a fat free mass. Subtracting fat free mass from an individual's total body weight gives body fat mass. The value of % body fat is used to classify individuals as obese or otherwise.

The ability to accurately measure body fat using the deuterium dilution technique enables better diagnosis of body fatness and facilitates putting in place mitigating measures.

More information can be found here:
European Development Days 2017



The World Breastfeeding Week celebrated world over, took place from 1–7 August 2017. With a theme "Sustaining Breastfeeding Together" we commemorated it with the reminder on how stable isotope techniques can be used to assess breastfeeding practices objectively.

Read the full article on the IAEA Website.

Interregional Technical Cooperation Project on Stunting

Stunting is caused by multiple factors ranging from household food insecurity and unhealthy environmental conditions to inadequate nutrition and a lack of access to health care. Twelve countries in the IAEA interregional project on Stunting Reduction Programmes are using stable isotopes to evaluate nutrition interventions in their countries, where stunting is a serious concern with long-term effects at the household, community and country levels.

Two training courses have been held in 2017 to support the teams in undertaking their projects. The first workshop in February trained the field staff from the countries on the standard operating procedures for the deuterium dilution technique to assess body composition and the deuterium dose-to-the mother technique to assess breastfeeding practices. The course was hosted by the IAEA Regional Designated Centre of Nutrition, the Joint Research Unit in Nutrition and Food in Rabat, Morocco.

The second course hosted at IAEA Headquarters in June brought together the data managers from the countries. The course included training and familiarization with concepts of data management and statistical analysis, as well as preparation for data cleaning, and statistical analysis.

With these new skills learned from the workshops and supplies arriving in the countries, the teams will soon start data collection.

Success Story

How Haiti is responding to anaemia with the help of nuclear techniques

Recognizing that anaemia is a major public health problem, the Government of Haiti passed a legislation in February 2017 to make compulsory the fortification of wheat flour, which is the main staple food, with essential vitamins and minerals, including iron. On the request of the Haitian government, the IAEA supported a study to choose the most cost-efficient iron form for fortifying wheat flour in support of this legislation.

The study, implemented in partnership with the Human Nutrition Laboratory of ETH Zurich, strengthened the collaboration between the National Laboratory of Public Health and Nutrition at the Ministry of Health. This will be a model for future public health nutrition research, policy and programme planning in Haiti.

Check the full article on our
IAEA website

Study participants waiting for the test meal.
(Photo courtesy of Isabelle Herter-Aeberli)

Come and attend our symposia at the IUNS 21st International Congress of Nutrition in Argentina!!!

Wednesday, **18 Oct, 8:00-10:00**
Room 4
144/78 – **Objective assessment of breastfeeding practices**

Thursday, **19 Oct, 11:30-13:30**
Room 9
144/76 – **Nutritional Challenges in the Elderly**

News

Grooming the next generation of experts in stable isotope techniques for nutrition

Capacity building in the use of stable isotope techniques in nutrition assessments is an integral component of the IAEA support to Member States as part of the Technical Cooperation (TC) Programme. NAHRES initiated several capacity building activities since the last newsletter issue.

Ten fellows from South Africa, Botswana and Swaziland congregated at the IAEA Regional Designated Centre of Nutrition in Rabat, Morocco, for a-one month training on the use of stable isotope techniques in nutrition assessments, including deuterium dilution technique for body composition and breast milk intake assays. Lao People's Democratic Republic also sent two fellows to Mahidol University, Thailand, for a similar training to enable implementation of a national TC project.

In the context of the first regional project on childhood obesity in Europe, participants from Albania, Bosnia and Herzegovina, Greece, Hungary, Latvia, Macedonia, Moldova, Montenegro and Ukraine were supported to attend the International Conference on Childhood Obesity held in Lisbon, Portugal, from 5-8 July 2017. A group of thirteen senior project officers from the 9 countries in addition to Portugal and Uzbekistan will visit from 6-10 November 2017 the Stable Isotope Biochemistry Laboratory, Scottish Universities Environmental Research Centre, in Glasgow, United Kingdom of Great Britain, to benefit from the experience of an established stable isotope laboratory.

The IAEA supported a member of the nutrition team from the Ministry of Health, Haiti, to attend a Master's training in Advanced Studies in Nutrition and Health at the ETH Zurich in Switzerland. The training included practical work on using stable isotopes to assess iodine bioavailability from food. The expertise acquired will greatly strengthen the coordination and implementation of nutrition interventions in Haiti, for example the food fortification programme; this is reported elsewhere in this issue.

Training of Trainers – Workshop on Body Composition Assessment

Teaching and managing quality assurance frameworks for the use of the deuterium dilution technique are an essential component of building capacities in IAEA Member States to ensure accuracy and reliability of the results.

Nutrition specialists from Asia, Africa, Europe and South America, who frequently serve as IAEA technical experts and lecturers, met in April in Vienna to update their knowledge and harmonize their technical support in body composition assessment, and to exchange experience from their respective countries.

"We have made new friends from around the world who have expertise in different areas of the deuterium dilution technique."

Bee Koon Poh, Kebangsaan University, Malaysia

They reviewed procedures of the deuterium dilution technique for assessing body composition, familiarized themselves with the new portable Fourier Transform Infrared (FTIR) spectrometry equipment, and prepared guidelines on the criteria for evaluating body composition data measured by the deuterium dilution method.

The IAEA will repeat the training of trainers at regular intervals to improve the quality of data.

Read the full article about the Training of Trainers on our IAEA website.

NEW CRP: Applying Nuclear Techniques to Understand the Link between Early Life Nutrition and Later Childhood Health

The January 2017 Issue of the NAHRES Newsletter carried a story on a consultant's meeting held in December 2016 to design a new coordinated research project (CRP) to evaluate how early life exposure to malnutrition and interventions affect the risk of medium and long-term metabolic dysfunction.

A new CRP approved in February 2017 will investigate the relationship between the first 1000 days and later childhood body composition and explore whether interventions during the first 1000 days can influence childhood body composition and associated risk factors of non-communicable diseases (NCDs). Seven low and middle income countries investigating various interventions in the first 1000 days and their effect on later health will be involved in the research commencing from 2018.

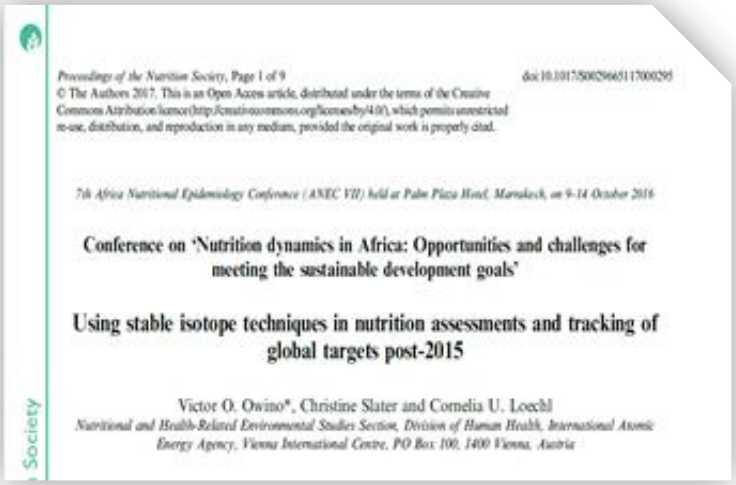
The key outcomes of the CRP will be:

1. Body composition data across the life course from pre-conception to childhood;
2. Interaction between early life body composition and later risk of NCDs;
3. Maternal-offspring interactions and how these influence risk of NCDs;
4. Data on how early life nutrition interventions affect body composition and risk of NCDs.

For further information check our website

Youg mothers at a breastfeeding counselling. (Photo courtesy of Helen Mulol)

New Publication: Using Stable Isotope Techniques in Nutrition Assessment and Tracking of Global Targets post-2015



Proceedings of the Nutrition Society, Page 1 of 9 doi:10.1017/S0029665117000295

7th Africa Nutritional Epidemiology Conference (ANEC VII) held at Palm Plaza Hotel, Marrakech, on 9-14 October 2016

Conference on 'Nutrition dynamics in Africa: Opportunities and challenges for meeting the sustainable development goals'

Using stable isotope techniques in nutrition assessments and tracking of global targets post-2015

Victor O. Owino*, Christine Slater and Cornelia U. Loechl
Nutritional and Health-Related Environmental Studies Section, Division of Human Health, International Atomic Energy Agency, Vienna International Centre, PO Box 100, 1400 Vienna, Austria

Society

Click on the screenshot above to read the paper online!

WE NEED YOUR OPINION!!!

Should we start organizing **WEBINARS** on the application of the different stable isotope techniques?

If so, *which topics are of interest to you?*

Please give us feedback:
nahres@iaea.org

What, not who: revamped IAEA website turning into true information hub – including on nutrition

With special thanks to A. Nitzsche and M. Gaspar, IAEA Office for Public Information

Long gone are the days when websites consisted of individual handcrafted HTML-powered pages with manually added links, sporting perhaps an animated GIF and the heartfelt appeal "Click me!" somewhere in the margins. 21st century websites are information powerhouses whose low-key design betrays very little of the enormous amount of content they can handle under the hood. Since summer 2016, the IAEA website is playing in this very same league. Its goal: serve a broad bandwidth of audiences and help them obtain exactly the information they need.

A first glance at the homepage's main menu already shows that a major shift has taken place: The IAEA's work areas have been broken down into topics, which allows even the uninitiated user to obtain relevant information on the site, without having to understand a lot about how the Agency is structured and works internally. Every page features an easily understandable description and as much related material as the IAEA can make available: news articles, videos and podcasts, upcoming events, and relevant projects and publications.

The topical pages are not the only innovation on the site. Another are the one-stop shops of Services and Resources, which bring together what the IAEA has to offer across the board to its stakeholders, whether they are students, job seekers, journalists, scientists or Member State representatives.

A modern website approach follows two principles: always offer information in its proper context and deepen the complexity of information from the top downwards. A visitor who is interested in the IAEA's health-related work visits the general health pages. From there, he can go to the Nutrition pages. And from there, move on further down to more specialised topics: Nutrition and ageing, Childhood obesity or Diet quality, for example. On each of these levels, he can also access related information that fits precisely to the topic described on the page.

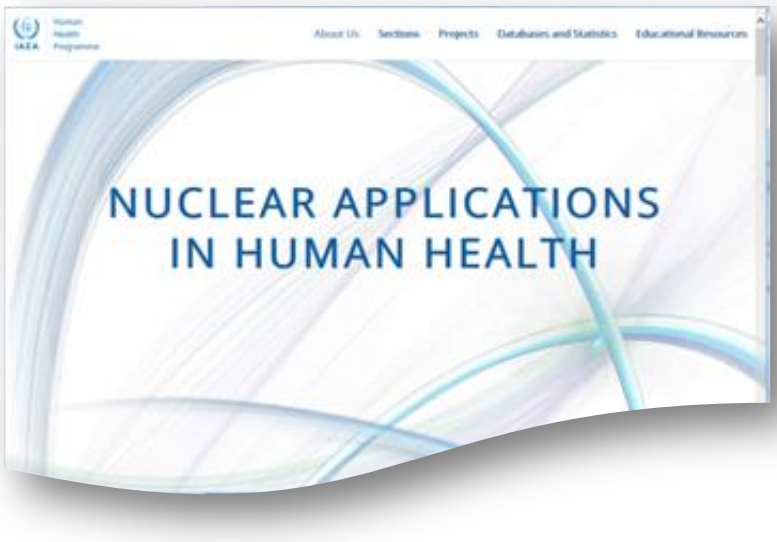
This is how the website can serve different levels of visitors: from the very general to the very specialized. Content is interlinked with other relevant parts of the website and related topics, so in theory… our visitors never have to leave the site!

You may find these new pages useful, as we have provided explanations of our work and the wider issues in lay language. Please consider promoting these new Nutrition pages.

Electronic NAHU-Portfolio

Are you interested in finding out more about our section and the projects we are working on?

Just **click on the Screenshot** and get to know why nutritional and health-related studies are so important and how stable isotope techniques can be used.



E-Learning

NEW – NEW - NEW

Doubly Labelled Water Technique to Assess Total Energy Expenditure

Our two latest E-learning modules are now available on the Human Health Campus!

With the help of this module you will comprehend the scientific basis of the doubly labelled water (DLW) technique, appreciate the importance of the DLW technique in the assessment of total energy expenditure (TEE), understand the practical steps to be taken to ensure good quality data collection and understand the relative merits of other commonly employed methods of energy expenditure measurement relative to the DLW technique.

Click on the picture to access the module

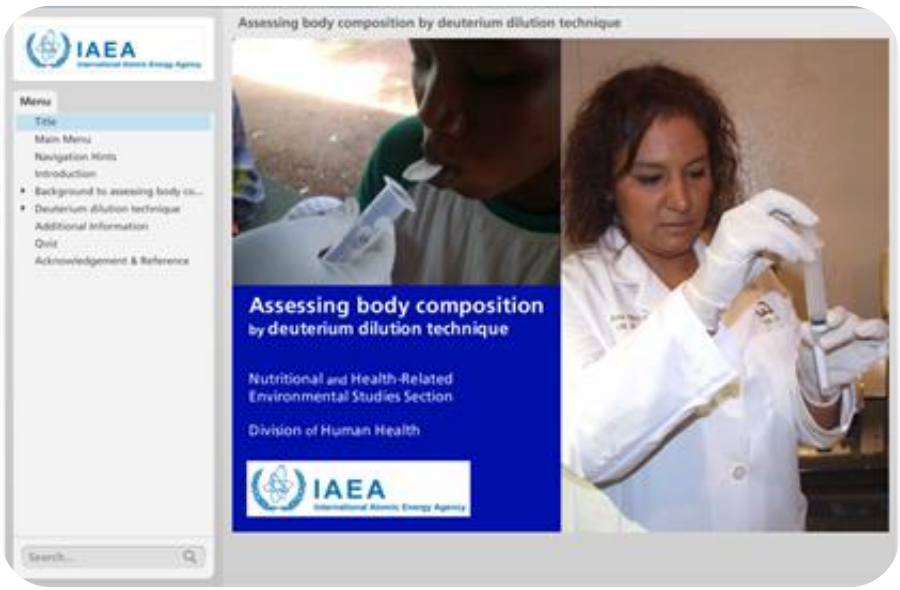
E-Learning

Deuterium Dilution Technique to Assess Body Composition

With the help of this module you will understand the importance of body composition in the assessment of nutritional status, the concepts of total body water (TBW), fat-free mass (FFM) and fat mass (FM) and the concepts and nomenclature associated with stable isotopes, particularly deuterium.

Click on the picture to access the module

We are looking forward to your feedback and suggestions! ☺



NAHRES Special - UNSCN

Nutrition: Exploring new and emerging issues

United Nations System Standing Committee on Nutrition

With special thanks to A. Mora, C. Campeau and S. Oenema, UNSCN Secretariat

Nutrition is a maker and a marker of development, hence its central position in the Sustainable Development Goals. The connection between nutrition and other issues and sectors, such as climate change or trade, is well recognised, as are its link with wider environmental problems and a range of non-communicable diseases.

The members of the United Nations Systems Standing Committee on Nutrition (UNSCN), such as IAEA, are on the cutting edge of tracking these links. They engage in a series of activities to follow current trends and information gaps as they surface during global processes and through knowledge exchange platforms. The diverse membership of UNSCN facilitates the uptake of new issues that are not yet fully covered by the nutrition community. Once identified, these new insights are taken on board by the UNSCN, individual members, or by various groups of academia or knowledge centres. UNSCN works from a rights based perspective; therefore, all the topics are to be considered from this approach. Some themes include:

4. **Nutrition, food systems and health systems**
   The UN Decade of Action on Nutrition looks at the development and strengthening of sustainable food systems for healthy diets, as well as aligned health systems. The Consultative Group on International Agricultural Research (CGIAR) is investigating how food and agricultural systems impact health in different contexts.
5. **Nutrition, food systems and social protection**
   Food system(s) have some built in locks that prevent people from escaping their (intergenerational) situation of malnutrition and poverty. UNSCN members, including IAEA are working on a paper about how schools as a system, can play a role in improving malnutrition for all.
1. **Nutrition and emergencies**
   Greater attention should be devoted to the nutritional status of people on the move because of emergencies and protracted crises. UNSCN is working with the Global Nutrition Cluster in order to make sure nutrition is better integrated in humanitarian responses.
2. **Rural transformation, urbanization and nutrition**
   Rural transformation creates opportunities and challenges for people in both rural and urban areas. Integrated approaches would allow food systems to adapt to evolving food environments and nutrition transition. The Committee on World Food Security (CFS), supported by UNSCN has done some preliminary work to identify knowledge gaps in this area.
3. **Climate change, nutrition security and increased resilience of food systems**
   Multi-sectoral action is essential in order to ensure climate change resilient food systems that, at the same time, ensure a variety of crops that contribute to a diverse diet. UNSCN members prepared a paper that will be published soon on sustainable diets for healthy people and healthy climate.

Questions remain, so support is needed by UNSCN members, along with others. Together we can work to identify critical emerging issues, propose strategies to investigate them and tactics to address knowledge gaps.

The NAHRES Team

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Feedback

The NAHRES Team appreciates your feedback! If you have any questions or comments, please send them to:

nahres@iaea.org

NAHRES WORD SEARCH

F C S L B W Y U B F G H L A T
M U I R E T U E D N U F N S P
Q F E C J R W R I H S A J K J
B H O M S B J T E A E D V P C
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Impressum

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