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Contents

To Our Readers

Best wishes for a happy, healthy and peaceful year 2017!

I hope everyone has started the New Year full of energy and good resolutions! We at NAHRES are certainly looking forward to another interesting year! Stay tuned!

In this newsletter we are sharing some of the news of the second half of last year about new and nearly completed regional projects in Europe and Africa, the preparation of a new research project on growth of malnourished children and our presence at ANEC VII and Micronutrient Forum Global Conference. Just before Christmas, we learned about recent technological advances to estimate dietary intake and energy expenditure and the need to validate these technologies using the doubly labelled water technique.

Check out our new eLearning module on Dual Energy X Ray Absorptiometry – we are looking forward to your feedback and suggestions!!! For those laboratory groups having an IRMS - we are continuing our inter-laboratory comparison for doubly labelled water! Do not miss this opportunity and feel free to share the information with your networks!

Cornelia Loechl, NAHRES Section Head, second from the right, during the Micronutrient Forum in Cancun, Mexico. (Photo courtesy of IAEA)

At the end of September we had to say good-bye to Christine☹. We wish her lots of new and exciting experiences. She wrote a letter from home about her new routine – or not… It's included on the last page of the newsletter. Our new intern Carolin who we welcomed in October has come up with a new word search instead of the crossword puzzle! Try it out!

All the best,
Cornelia

Meetings

Of Olympics and Nutrition
- The Race Pitting South Eastern Europe Against Childhood Obesity

Memories of the historical Olympic Games held in 1986 were still alive, when ten countries from South Eastern Europe and representatives from WHO/Europe, the European Association for the Study of Obesity (EASO), and the IAEA converged from 31 October to 4 November 2016 in Jahorina, the picturesque mountainous Winter Olympics city of Bosnia and Herzegovina. However, the purpose of this gathering was different.

The prevalence of childhood overweight and obesity is growing in all South European countries. Based on the WHO European Regional data, between 20-50% of all school children are overweight in the majority of South Eastern European countries. A number of initiatives focused on the obesogenic school environment, but their implementation and evaluation are not standardized across the region.

Group photo of workshop participants. (Photo courtesy of IAEA)

The World Health Organization (WHO) is supporting a European Childhood Obesity Surveillance Initiative, which calls for standardized data on rates of overweight/obesity among primary school children. However, the definition of obesity, based on body mass index, does not accurately reflect adiposity in children and nuclear techniques can offer a detailed understanding of fat and lean mass.

In order to ensure the accurate surveillance of childhood obesity and the evaluation of obesity focused interventions through the use of body composition assessment, the IAEA is supporting the first ever European regional project RER6034: "*Applying Nuclear Techniques to Design and Evaluate Interventions to Prevent and Control Obesity in Adolescents in South-Eastern Europe*." The rendezvous in Jahorina served as the first regional coordination meeting for countries to plan the implementation of the project.

Participants were introduced to the technical aspects of assessing body composition using both deuterium dilution and bioelectrical impedance analysis. Additionally, there was training on assessment of physical activity and sedentary behaviour using body mounted accelerometers and questionnaires.

"…the IAEA is supporting the first ever European regional project RER6034: Applying Nuclear Techniques to Design and Evaluate Interventions to Prevent and Control Obesity in Adolescents in South-Eastern Europe."

The ten Member States: Albania, Bosnia and Herzegovina, Bulgaria, Hungary, Macedonia, Moldova, Montenegro, Romania, Portugal, and Ukraine participated, together with two experts (from the United Kingdom and Netherlands), WHO/Europe and EASO representatives, and the technical and project management officers of this regional project (Ms Wiszczor and Mr Victor Owino), who provided support and guidance at this 1st coordination meeting.

Further training events are planned for 2017 on field procedures for measuring body composition by deuterium dilution (Tirana, Albania 6 to 10 March 2017) and physical activity assessment (Podgorica, Montenegro 22 to 26 November 2017).

The workshop participants during one of the meeting sessions. (Photo courtesy of IAEA)

Meetings

Regional Efforts to Understand Overweight, Obesity and Physical Activity in African School Children - Achievements of RAF6042 and ROUND-IT

A final coordination meeting of RAF6042: *Applying Nuclear Techniques to Design and Evaluate Interventions to Reduce Obesity and Related Health Risks*, was held from 10 to 14 October 2016, to present the achievements of the project. Hosted by the Biochemistry Department of the Central Health Laboratory at Victoria Hospital in Candos/Mauritius, the meeting was attended by project coordinators from the participating Member States, a representative from WHO-AFRO, two international experts, and the IAEA technical and project management officers. The project findings are particularly important as they are the first situation assessment to be carried out on overweight, obesity and physical activity levels of African school children in urban areas where the problem is most prevalent. The data collected through the project will be shared with policy makers and other stakeholders in order to support evidence-based intervention planning and the development of action plans.

From the preliminary results presented, it is apparent that the WHO recommended BMI-for-age to classify overweight and obesity in children between 5-19 years old substantially underestimates the prevalence of overweight and obesity based on measures of body fatness in African school children. The regional project also facilitated the creation of a regional consortium 'ROUND-IT' (Reducing Obesity Using Nuclear techniques to Design Interventions in Africa) that will compile individual Member State data in a pooled database for further analysis.

Explore more details about the project here:

Designing and Evaluating Interventions to Reduce Obesity and Related Health Risks in Africa: How Nuclear Techniques Can Help

The participants gathered briefly for a group photo under the shades of the Mauritian palm trees. (Photo courtesy of IAEA)

Meetings

Understanding Body Composition during the First Two Years of Life

There is strong evidence that growth in the first 1000 days of life, from conception to two years of age, represents a critical period for influencing later health. However, the assessment of growth during this crucial period is largely based on weight and height measures, which do not capture the quality of growth in terms of body composition, that is, the fat and lean mass. The IAEA is supporting a doctoral Coordinated Research Project to assess longitudinal changes in body composition of healthy infants during the first two years of life which will contribute to improved understanding of growth in infancy and build capacity in Member States through the training of PhD students.

A meeting for the Doctoral CRP on *'Longitudinal Measures of Body Composition of Healthy Infants and Young Children up to two Years of Age Using Stable Isotope Techniques'* was held in South Africa, from 28 November to 2 December 2016, gratefully hosted by the Developmental Pathways for Health Research Unit of the University of Witswatersrand (Wits). Doctoral students and statisticians from Brazil, Kenya, Pakistan, South Africa and Sri Lanka were invited to the meeting to discuss and plan the data management of the pooled project data. The project officers from the IAEA, Alexia Alford, and the Bill & Melinda Gates Foundation, Florencia Vasta, were also in attendance and benefitted from working with the team and visiting the South African field site. With thanks to the grant from the Bill & Melinda Gates Foundation, data collection will continue in 2017 and extend the sites to include Australia and India.

The meeting participants in front of the University of Witwatersrand. (Photo courtesy of IAEA)

Success Story

NAHRES has received a major grant of over US $ 1 million to support additional measurements on infant body composition in the above mentioned CRP.

Read the full article here

Meetings

Medium and Long-Term Metabolic Dysfunction Risk Associated with Acute Malnutrition in Childhood

Is it enough to survive malnutrition or is it more important to thrive? This and other questions formed the theme of the recent Consultants' Meeting on *"Growth and Body Composition in Children Recovering from Acute Undernutrition and Risk for Future Non-Communicable Diseases"*, which was held in Vienna from 5 to 8 December 2016.

Acute malnutrition still remains a major problem, underlying at least 45% of all deaths among children below five years of age in low to middle income settings. Interventions to treat acute malnutrition with standardized treatment protocols, including the development of specific therapeutic products and scale up of the integrated management of severe acute malnutrition (IMAM) approach, have resulted in a significant reduction in severe acute malnutrition (SAM) case fatality.

Monitoring the success of these interventions is based on measuring immediate recovery from acute malnutrition, but little is known about longer term health outcomes of children surviving acute malnutrition. The "Developmental Origins of Health and Disease (DOHaD)" theory links early nutritional adversity to a wide range of adult problems including cardiovascular disease and metabolic disease. As understanding of long term outcomes improves, the details of treatments may change, for example, composition of therapeutic/supplementary foods or target weight gains in programmes. It is also possible that post-treatment interventions may develop as a way of reducing adverse long term outcomes, for example, social support or longer term antibiotic prophylaxis.

The consultants discussed many of the challenges involved with assessing nutritional health in acute malnutrition. They include assessment of nutritional health during this crucial period of early vulnerability, which is largely based on anthropometric measurements of growth, such as body weight, with insufficient attention to the quality of growth and the relative partitioning of nutrients to fat-free mass (FFM) or fat mass (FM).

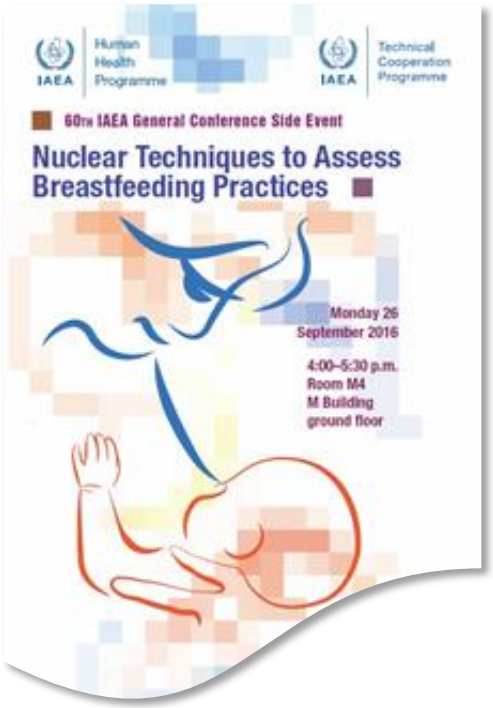
Other challenges addressed included the use of Mid Upper Arm Circumference (MUAC) to measure recovery and how to overcome the methodological issues in body composition assessment when the inherent assumptions are challenged in children with and recovering from acute malnutrition.

Considering the meeting discussions, a new coordinated research project is planned to understand the impact of treatment for acute malnutrition on long term body composition, and to validate simple methods that may be able to track recovery from acute malnutrition.

Internationally renowned nutrition experts from Belgium, Denmark, Kenya, the UK, WHO and NAHRES Technical officers participated in the meeting. (Photo courtesy of IAEA)

Assessing Breastfeeding

Click on the flyer below to read the full article on the NAHRES Breast-feeding side event we hosted during the 60th IAEA General Conference.



Meetings

Nuclear Techniques to Validate Accessible Energy Balance Assessment Methods

To achieve the Sustainable Development Goal 2 of ending hunger and all forms of malnutrition, it is important to understand the dietary intake and energy expenditure of vulnerable groups. However, many low resource countries do not routinely collect energy balance data due to limited availability of suitable and valid techniques. This represents a major gap in understanding how the double burden of malnutrition can be managed.

To discuss recent technological advances in the field of dietary intake and energy expenditure that could be suitable for data collection in low resource settings, experts from China, United Kingdom, United States of America, IARC-WHO, and FAO, met at the IAEA Headquarters in Vienna from 12 to 14 December 2016. Current methods, as well as new devices to estimate dietary intake and energy expenditure were explored, with many technologies identified which possess untapped potential for use in low resource settings.

"….many low resource countries do not routinely collect energy balance data due to limited availability of suitable and valid techniques."

Future work is recommended to validate the technologies against the nuclear technique of doubly labelled water in low resource settings to ensure critical guidance can be provided to Member States on appropriate methods for collecting energy intake and expenditure data in vulnerable target groups.

The meeting participants during a short break. (Photo courtesy of IAEA)

Human Health Campus

Check our informative resource website for health professionals - Just click on the photo below!

Nutrition Flyer

Our Nutrition Flyer is also available in Spanish and French now - Click below to find the flyers on our Human Health Campus website.

Meetings

Making Africa Nourished Again: - The IAEA and ANEC VII declaration in Marrakech

The theme of the African Nutritional and Epidemiological Conference (ANEC VII) held from 9 to 14 October 2016 in Marrakesh was '*Nutrition Dynamics in Africa: Opportunities and challenges for meeting the Sustainable Development Goals'*. The IAEA sponsored a session on 'Nutrition Assessments' through grants to young and upcoming scientists as presenters and attendees.

Mr Victor Owino, a Nutrition Scientist at NAHRES, represented the IAEA and delivered a keynote address titled '*Using stable isotope techniques in nutrition assessments and tracking of global targets post-2015*'. The presentation highlighted how the IAEA activities in nutrition are aligned to the Sustainable Development Goals and the benefits of using stable isotopes in nutritional assessments. Data from Africa, Asia and Latin America was presented on the use of deuterium oxide to measure breast milk intake and the exclusivity of breastfeeding below six months of age. The routine method for estimating exclusive breastfeeding rates is based on mothers' recall of an infant's feeding practices. However, based on the data presented, the rate of exclusive breastfeeding is overestimated by at least 40% when based on mother's recall, which may be due to memory, bias, and the pressure on mothers to be seen as compliant with the global recommendation on breastfeeding practices. In pursuance of meeting the World Health Assembly target of 50% exclusive breastfeeding, accurate tracking is necessary and nuclear techniques are a vital tool in measuring exclusive breastfeeding rates and verifying the accuracy of recall data.

The other presentations in the IAEA sponsored session included *'Harmonization of anthropometric assessments*' by Dr Steve Wootton, a longstanding IAEA expert from the University of Southampton, United Kingdom, and a debate on '*Are strong driven fortification and supplementation programmes the panacea for addressing micronutrient deficiency in Africa*?' with Mr. Greg S. Garret (GAIN HEALTH) on the proposing side and Mr Mawuli Sablah (FAO Regional Office, Accra Ghana) on the opposing side. Professor Alan Jackson, International Malnutrition Task Force (IMTF), facilitated a workshop on *'Communities of Practice for acute malnutrition management and for food technologists'* aimed at inspiring professionalism in nutrition practice in Africa.

In the face of the high burden of undernutrition and the rapid rise in diet-related non-communicable diseases in Africa, ANEC VII resolution made a clarion call to Africans and the world '*to promote and work together across sectors to operationalize the Decade of Action on Nutrition; to achieve the Sustainable Development Goals and the [African Union] Agenda 2063 [to end malnutrition]: and create the well-nourished Africa We Want*'.

Victor Owino (second from the left) and IAEA grantees to ANEC VII. (Photo courtesy of IAEA)

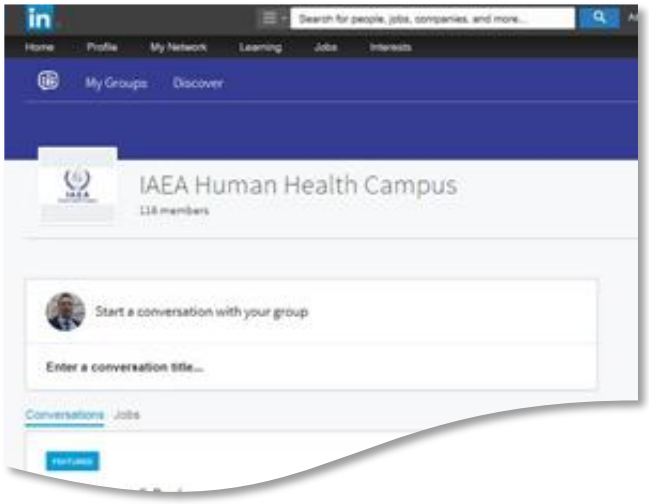
Read more about the meeting here:

An IAEA web article covered the keynote speech given by Mr. Victor Owino.

IAEA Recommends Nuclear Techniques to Improve Nutrition Assessments in Africa

Human Health Campus

Join the "IAEA Human Health Campus" on LinkedIn – Search for the group and request to join.



Meetings

Showcasing IAEA's Contribution to Combat Hidden Hunger

The Micronutrient Forum Global Conference took place in Cancun, Mexico, from 23 to 28 October 2016 and attracted about 1000 researchers and programme planners from around the world. This year's focus was "Positioning Women's Nutrition at the Centre of Sustainable Development" emphasizing the role of women as both a focus of nutrition interventions and key partners in the delivery of programmes. The IAEA organized a 90-minute sponsored symposium entitled *"Stable Isotope Techniques Help Optimal Formulation and Impact Assessment of Food Fortification Programmes"* on Sunday, 23 October 2016. It described the IAEA's contribution in the area of micronutrient nutrition and showcased the use of stable isotope techniques for assessing iron bioavailability and vitamin A status in the context of food fortification initiatives. Two examples from Thailand and Mexico demonstrated the value of assessing body vitamin A stores using the retinol isotope dilution technique to evaluate the impact of rice and milk fortified with vitamin A. Findings from Haiti and Senegal confirmed differences in the bioavailability of iron fortificants from wheat flour and the influence of iron inhibitors on iron absorption in mother-child pairs.

Read more about IAEA's role using stable isotope techniques to fight hidden hunger:

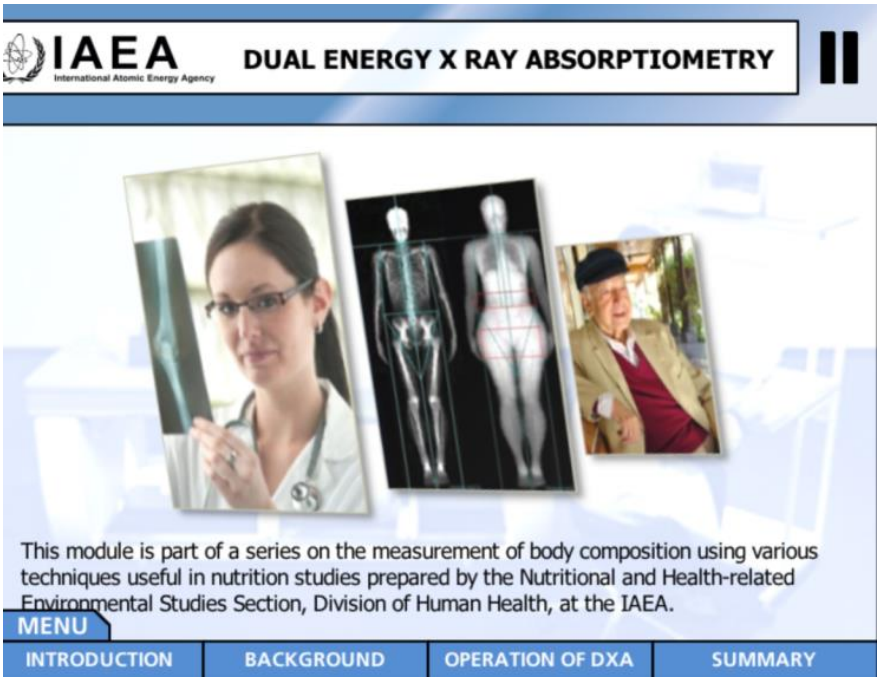
IAEA's Contribution to Combat Hidden Hunger

E-learning

The latest in our series of e-learning modules, on *'Dual Energy X Ray Absorptiometry'* is now available on the Human Health Campus:

Click here to access the module

We are looking forward to your feedback and suggestions!



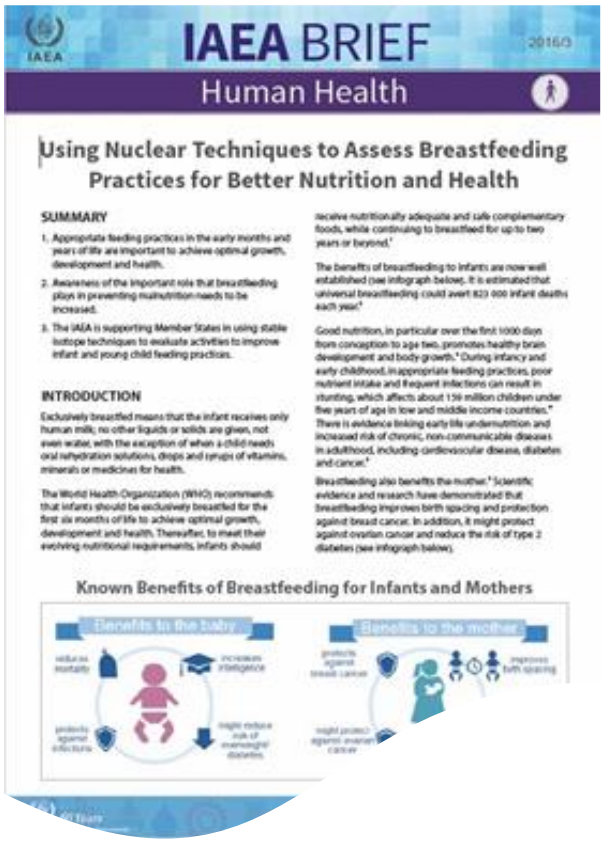
News

Human Health Brief on Breastfeeding

NAHRES has put together an IAEA Brief with information on the use of nuclear techniques to assess breastfeeding practices.

The brief is available in English and Spanish.

Click on the picture below to download the full IAEA Brief.



IAEA Inter-laboratory Study For Doubly Labelled Water

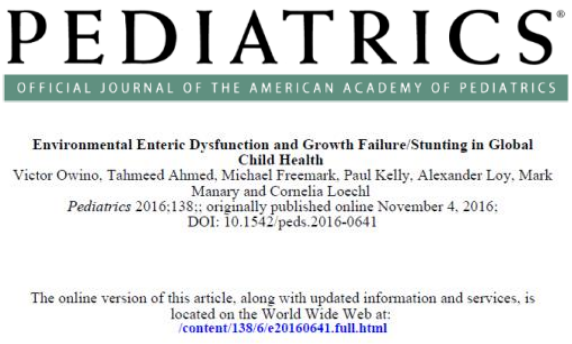
The IAEA is undertaking an inter-laboratory comparison study for Doubly Labelled Water by isotope ratio mass spectrometry (IRMS). This study will provide a means to self-assess the quality of measurements as performed in stable isotope laboratories and to further improve the consistency of data as provided by different laboratories.

For further information and interest in participation please contact: DLWInterLab@iaea.org

Isotope Techniques to Help Understand Links Between Disease and Child Growth

Two recent scientific reviews, co-authored by IAEA experts, have highlighted that deploying stable isotopes to assess a condition contributing to growth failure in children has a potential to improve the understanding of what Environmental Enteric Dysfunction (EED) is and how it can be combatted.

The reviews were published in the world-renowned journals Pediatrics (November 2016) and the Journal of Pediatric Gastroenterology and Nutrition (January 2017).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Environmental Enteric Dysfunction and Growth Failure/Stunting in Global Child Health
Victor Owino, Tahmeed Ahmed, Michael Freemark, Paul Kelly, Alexander Loy, Mark Manary and Cornelia Loechl
Pediatrics 2016;138:; originally published online November 4, 2016;
DOI: 10.1542/peds.2016-0641

The online version of this article, along with updated information and services, is located on the World Wide Web at:
/content/138/6/e20160641.full.html

Check also our article on the IAEA website

NAHRES Word Search

M	O	Z	W	B	D	P	Y	L	Y	E	X	C	M	U
Z	F	S	R	I	U	Y	C	U	T	C	H	S	I	N
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FOOD
MALNUTRITION
SUSTAINABILITY
HEALTH
ZINC
ISOTOPE

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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 Section News

Life after Retirement: A Letter from Home

Christine Slater, Former Nutrition Specialist, NAHRES

Dear friends and colleagues around the world,

As many of you know, I retired from the IAEA at the end of September, and returned to my home in the North of England, but I have certainly not severed my connection with the IAEA. I quickly settled back into living at home, and was lucky that the autumn in the UK was particularly beautiful this year, with many sunny days and fantastic sunsets worthy of an evening stroll to admire the fiery sky across the Solway Firth and the hills in the South of Scotland, which I can see as I wander along the sea wall, or the promenade, close to my home.

My boxes arrived two days after me, and my first visitor arrived two days later, so there was a big incentive to unpack quickly. It was remarkably easy to settle into a more domestic routine, visiting family, and doing battle with the weeds and moss in the courtyard outside my house, but the domestic routine did not last long, because my first mission as an IAEA expert started less than a month after I returned home, and since that time, I have hardly stopped. Since 'retirement', I have been to Bosnia and Herzegovina, Vienna, South Africa, and New Zealand and spent many hours working from home in support of my former colleagues, so there is no time to be bored!

The important thing is to make sure to make time for family and friends, and I am looking forward to taking on the role of Grandma for a few weeks over the Christmas and New Year period, before embarking on more travel and home based assignments for the IAEA next year.

I have been very fortunate to spend 10 years in Vienna at IAEA Headquarters, and to meet many wonderful, dedicated professionals from around the world, and I look forward to continuing this association over the next few years in my capacity as an independent consultant as I slowly wind down to a real retirement.

I wish you all 'Good Health, Good Luck, and Prosperity' in 2017,
With Best Wishes,

Christine

Grandchild number 4, Sophie, 7 months. (Photo courtesy of Christine Slater)

Impressum

Nutritional & Health-Related Environmental Studies Newsletter No. 05, January 2017

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