

OPENING SPEECH

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Distinguished delegates, ladies, and gentlemen:

On behalf of the Director-General and on my own behalf, I welcome you to the headquarters of the International Atomic Energy Agency and to this International Conference on Isotopic and Nuclear Analytical Techniques for Health and Environment. There is a greater consciousness today of the links and inter-dependence of the two topics; scientific research which leads to a better understanding and knowledge of environmental issues is vital if we are to not only to protect our fragile environment, but also to ensure it is safe and healthy for present and future generations.

The interest of the international scientific community is clear. The Conference has attracted 220 participants from 61 countries. We will hear 63 oral presentations, and have the opportunity to see about 70 poster presentations. The subjects range from descriptions of new techniques; quality assurance and metrology; environmental monitoring; radioecology; safety of food; isotopic techniques in health and environment and new developments. I am sure that the selected topics will provide you with a wealth of information and many opportunities for discussions.

The Agency is often better known for its safeguards, safety and nuclear power roles, but its work in nuclear sciences and applications is less understood. I am sure that many delegates will be aware of the priorities established at the World Summit on Sustainable Development, the so-called WEHAB priorities, representing Water, Energy, Health, Agriculture and Bio-diversity. The Agency contributes to the WSSD priorities through its programmes in the first four areas, showing how nuclear and isotopic techniques can make significant and often unique contributions in serving basic human needs, and also, importantly, in environmental protection, both marine and terrestrial.

These techniques are now well established as research and application tools in a wide variety of fields. The Conference review of the broad range of beneficial uses of these techniques will help to increase our understanding of their contributions to humanity, and of their socio-economic impact. Since Fermi's first nuclear chain reaction in 1942, 30 years after the introduction of high resolution Germanium detectors and ten years after major advances in data processing and software development, the techniques have evolved to contribute to virtually all aspects of our daily lives. We will hear about some of them during the next four days.

The Conference will also be concerned with the importance of the analytical quality of results, a topic of increasing awareness and investigation. Uncertainty of measurements, traceability and metrology of measurement processes need to be considered in the context of global trade. Exchange of information needs to be trustworthy, recognising that reliable international measurement standards often underlie legal and economic decisions. Nuclear techniques are particularly suited to serve as reference methods because their physico-chemical principles are completely understood and can be described mathematically, transcending national boundaries. This valuable aspect will be also highlighted during the Conference.

I would also like to refer some different, interesting and possibly little-known applications of non-destructive nuclear techniques which have been developed for archaeological research and for the preservation of cultural heritage. The Agency recently co-ordinated an international project in Latin America using a combination of X ray fluorescence, neutron activation and particle accelerator techniques for trace analysis in objects of interest. Satisfactory answers to many questions were obtained on regional, archaeological and historical issues.

In another area, the Agency laboratories in co-operation with Polish, Cuban and Austrian

scientists developed a portable X ray fluorescence device for non-destructive examination of objects of art. It can produce within minutes a complete analysis of peculiar details, only a few square millimeters in size, on paintings, sculptures, polychromes, ceramics and coins. A prototype has been successfully used in the Vienna Museum of Historical Arts for the authentication of 16th century paintings and the categorization of old Etruscan bronzes and coins. We will hear more about these somewhat exotic uses of nuclear and isotopic techniques later this week.

Other sessions will address nuclear analytical techniques in radioecology and air pollution studies, and the application of isotopic and nuclear analytical techniques for environmental studies and surveys. Some interesting new developments and advanced techniques will be highlighted. Another session focuses on nuclear analytical techniques to assess the safety of food and drinking water, closely linked to health in the environment.

Nuclear technologies for human health are active in many areas for prevention, diagnosis, treatment of disease, complemented by range of isotopic techniques to address problems of nutrition and health throughout the human life cycle. Combating malnutrition, for example, in the field of micronutrient deficiencies, is a valuable preventive measure for many developing countries, whether it is a simple measurement of intake of breast milk by the baby or a complex monitoring of micronutrient malnutrition in vulnerable segments of population, or predicting the onset of diabetes in adults, there is a viable nuclear technology tool waiting to be used.

Finally, the need for training and education in nuclear science will be emphasised during a round table discussion at the end of the meeting. As we know, students are reluctant to study nuclear sciences, and university curricula in the field are becoming less. The Agency promotes programmes for nuclear knowledge management, and we will appreciate your inputs and suggestions during the discussions for programme improvements.

The challenges made by the Conference are significant, but I am confident that you will succeed in your objectives. I wish you a very pleasant stay here in the Agency and in Vienna, and a productive and successful meeting. I declare the Conference open.

OPENING ADDRESS

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Dr. Burkart (Werner)
Dr. Iyengar (Venkatesh)
Dr. Rossbach (Matthias)
Dr. de Regge (Peter)
Distinguished experts and colleagues
Ladies and gentlemen,

(61 countries—220 participants)

I am both honoured and delighted to be with you today to participate in the opening of this remarkable International Conference on Isotopic and Nuclear Analytical Techniques for Health and Environment.

And I bring you warm greetings from the **Director-General of the World Health Organization** — Dr. Gro Harlem Brundtland; *and* I'm also very pleased indeed to be able to bring you greetings and encouragement from **WHO's Director-General-Elect**, Dr. J.W. Lee, who will take up office on 21 July.

In scanning the Programme for this international conference, one is immediately impressed by the wealth of international expertise you all represent, and the spectrum of important issues covered by the papers you will be presenting.

Ladies and Gentlemen, for this particular Opening Session of the Conference, there are two clear benefits that I would like to draw your attention to — benefits that go well beyond the primary purpose of the Conference which is to exchange the latest, up-to-date information, on a whole range of isotopic and nuclear analytical techniques across a spectrum of health, nutrition and environmental situations.

Firstly – and of considerable benefit to both IAEA and WHO – this Conference substantially builds, reinforces, enhances, and develops, most of the important areas of common interest and collaborative action that IAEA and WHO currently share, across health, nutrition and the environment.

Such areas include, for example:

1. **Nuclear medicine applications**, for example in communicable diseases, such as diagnostic techniques in tuberculosis and malaria, where both organizations are involved in training, research and new technologies;
2. **Applied radiotherapy and radiobiology**;
3. **Dosimetry and medical radiation**;
4. **Nutrition** – the area with which I am most familiar and in which my own Nutrition Department, and that of Dr. Iyengar, work so closely together (and I'm looking forward to this part of the conference programme on Thursday and Friday) – in a wide range of isotopic and nuclear techniques in body composition measurement and nutrient absorption studies in areas such as obesity, HIV/AIDS and nutrition, micronutrient malnutrition, foetal and maternal malnutrition and low birth weight babies, infant growth, and nutrition of older people;

And then also in

5. **Radiopharmaceuticals** and their quality assurance;
6. **Food irradiation** – and its key role in food safety, as well as guidance on radionuclides in food; and
7. **Radiation safety** and the whole vast area that this covers, as a multi-agency global issue.

Then secondly – the second benefit I would draw your attention to, and of even greater significance than the first, but following from it, relates to the still **vast** global numbers, the large population groups, the millions worldwide still suffering from diseases such as:

Tuberculosis

Malaria

Malnutrition in its various forms

HIV/AIDS

and many other such conditions for which nuclear and isotopic techniques are so essential for ensuring adequate progress can be made in combating, reducing and eliminating them; techniques without which, in some cases, little progress could be made at all.

Again, in my area of nutrition —

Vitamin A deficiency is the commonest cause of preventable childhood blindness — 230 million under-5 children VAD worldwide. We rely on isotopic techniques in studies currently underway to measure body vitamin A stores in infants and in pregnant mothers, to determine both safe and effective doses of vitamin A.

Micronutrient malnutrition in its many forms — iodine, vitamin A, iron, zinc, folate — affects over 2000 million worldwide. **Micronutrient fortification** is one of the most promising solutions, and **isotope absorption studies** are needed to determine a whole range of crucial efficacy and safety issues.

HIV/AIDS and malnutrition form a terrible synergistic reinforcing spiral towards illness, wasting and death. Huge population groups — especially in sub-Saharan Africa — are effected. In some countries 20-40% of the population are infected with HIV. **Nutritional interventions and antiretroviral drugs** can both help change the pattern of this disease. **Isotopic techniques** are crucial for understanding the nature of body composition changes, both in the wasting malnutrition that comes with HIV/AIDS, and for assessing the benefits of nutritional and antiretroviral interventions.

These are just a few examples of how interagency collaboration between IAEA and WHO - working together in support of Member States and vast populations in need - rises to its noblest and best.

And we depend and draw upon **your** expertise to help us develop and channel latest techniques such as isotopic and nuclear methods, to benefit the health of those most in need.

So we in WHO are delighted to be participating in this International Conference with you — the experts — along with our colleagues in IAEA.

We are convinced that, looking at all the excellent preparatory work that has gone into the Conference, and looking at both the agenda and the impressive expertise gathered here, this International Conference will surely:

1. result in an exciting exchange of information on current developments and applications of isotopic and nuclear analytical techniques, and their future developments;

and

2. explore potential opportunities — especially for developing and rapidly industrializing countries — for applying isotopic and nuclear analytical techniques in health care, nutrition and environmental monitoring.

And related to these immediate objectives are the further benefits I've outlined, to both IAEA/WHO strengthened collaboration and ultimately to many millions worldwide.

I congratulate IAEA on the organization of this splendid International Conference.

And I wish you all — us all — the very best for a most successful meeting.