IAEA 與 NEA 動態報告

2018/5/14- 5/25

報告摘要(KEY INFORMATION)

1. 國際原子能總署首度就阿富汗癌症照護需求視察，以提供當地政府強化健康照護人力之建議，並設置第一座國家放射療法治療中心。應當地部長要求，率領 WHO 及 IARC 專家代表，初步採取 imPACT 方式以了解該國癌症管制架構下之缺陷及需求。
2. 國際原子能總署署長 Mr Amano 於開幕儀式提到該署致力於幫助全世界就核能科技做最佳運用，以建立低碳能源及因應氣候變遷之效應。副署長 Mikhail Chudakov 亦於現場談論到核能在未來扮演之腳色並討論到核能電廠控制系統之未來進展。署長亦提到專家之知識保存相當重要，以避免後續無人傳承。
3. 來自 10 個國家之放射療法專家透過 IAEA 協助，於 2018 年 4 月 16 至 20 日假模里西斯舉辦區域性訓練課程，經了解過去事故發生成因，學習如何改善醫療設施安全性。
4. 國際原子能總署藉由 3 年計畫完成核子保安資訊系統現代化。該計畫於 2015 年啟動，動用 150 名專家並建立超過 20 個以上軟體應用，以促使核子保防更具效能、效率及安全。
5. 國際原子能總署代表團就 Kinshasa 大學 CREN-K 研究用反應器，於 2018 年 5 月 7-9 日，進行整合式同儕安全審查。代表團主要就 2004 年舉行之同儕審查以及從 2007 年至 2015 年後續注意事項予以追蹤。代表團建議應採取組織且具技術性測量，以確保反應器在目前停止狀態下之安全性。
6. 國際原子能總署副署長暨核子安全保安負責人(Juan Carlos Lentijo)與日本東海大學校長(Kiyoshi Yamadam)於 2018 年 4 月 27 日假國際原子能總署維也納總部簽署協議，以擴展在核能教育方面之合作，進而強化核能安全。
7. 日本環境大臣(Tadahiko Ito)於 2018 年 5 月 3 日拜訪核能署相關人士，感謝核能署對福島核災復原之貢獻，並討論於 2016 年於福島舉辦之災後食品科學研討會後續等事項。該大臣亦提供福島核電廠周圍環境除汙之新進展以及近一年來核能緊急應變之演練概況。

國際原子能總署近日新聞

IAEA Mission Helps Afghanistan Manage Growing Cancer Burden

國際原子能總署代表團協助控制日益增長之癌症

The International Atomic Energy Agency (IAEA) has carried out the first ever review of Afghanistan's cancer care needs to help the country prepare for a growing incidence of the disease among its people. The mission identified gaps in cancer diagnosis and treatment services, and recommended actions for the Government to strengthen its health care workforce and set up the country's first radiotherapy centre.

At the request of the Ministry of Health, the IAEA led a team of international experts, including representatives from the World Health Organization (WHO) and the International Agency for Research on Cancer (IARC), to review how patient access to cancer services could be improved. The assessment, known as an imPACT review, is often the first step countries take to understand shortcomings and needs within their national cancer control structure.

"An imPACT review provides a situation analysis and a set of recommendations to strengthen national cancer control capacities," said Arsen Juric, Programme Officer in the IAEA's Division for the Programme of Action for Cancer Therapy (PACT) and coordinator of last week's mission. "This tool helps countries to prioritize cancer- related interventions and investments, and can also be used as a basis for funding proposals."

Amidst a complex security situation, Afghanistan faces significant challenges in the delivery of health care. National health funds are scarce, and the provision of essential services and medicines relies heavily on external aid.

The review found that while diagnostic services for cancer are available in public and private health systems, activities are fragmented and not well coordinated. Diagnostic and treatment equipment is also insufficient to cover the country's needs, and there is a significant lack of qualified medical personnel – such as pathologists, radiologists, radiation oncologists, medical physicists and technicians – to provide adequate cancer care.

The experts recommended that the country identify priority areas to guide investments in cancer control, to expand the development of the health workforce and to start planning for the establishment of a radiotherapy facility within a comprehensive cancer care centre.

本期：IAEA Director General in Russia opens ATOMEXPO and Nuclear Management School, meets President Putin

The IAEA, through its technical cooperation programme, is providing technical and financial support to Afghanistan in areas related to radiation protection of workers and patients as a first step in the establishment of such radiotherapy services.

"Considering the transition of the disease burden in Afghanistan, it is important to pragmatically include cost-effective interventions for non-communicable diseases, including cancer, in national health care delivery packages," said WHO representative for Afghanistan Richard Peeperkorn.

With a predominantly rural and dispersed population of over 34 million and a life expectancy of just over 60 years, Afghanistan, like many low-income countries, struggles to cope with the rise of chronic diseases. According to IARC, there were an estimated 20 000 cancer cases in Afghanistan in 2012. By 2030, this figure is expected to rise to almost 33 000.

Women are particularly affected, as breast and cervical cancer account for half of all female cancer cases, killing over 2 000 a year. These types of cancers, if diagnosed early, can be treated effectively with radiotherapy.

"It is a dire need for the people of Afghanistan, especially women and children, to have access to treatment and care for cancer," said the First Lady of Afghanistan Rula Ghani, who also met with the imPACT review team. "Currently cancer is a death sentence for a person, which should not be the case, as the most prevalent cancers in the country – such as breast and childhood cancers – are amenable to proper treatment and care."

The team visited public and private health care facilities, medical schools and other institutions involved in the provision of cancer services in the capital Kabul. The experts discussed with local counterparts the delivery of services in cancer prevention, early diagnosis, treatment and palliative care, as well as radiation safety.

"Non-communicable diseases are an emerging health problem in Afghanistan for which we are not yet prepared to provide an adequate response," said Minister of Public Health Ferozudin Feroz at the mission's closing meeting. "The findings are an eye-opener, and we are committed to implementing the suggested interventions according to the available resources."

This was the 91st imPACT review conducted by the IAEA since 2005.

IAEA DIRECTOR GENERAL IN RUSSIA OPENS ATOMEXPO AND NUCLEAR MANAGEMENT SCHOOL, MEETS PRESIDENT PUTIN

國際原子能總署署長在俄羅斯參加 ATOMEXPO 論壇及核管理學校開幕儀式並與總統普丁會面

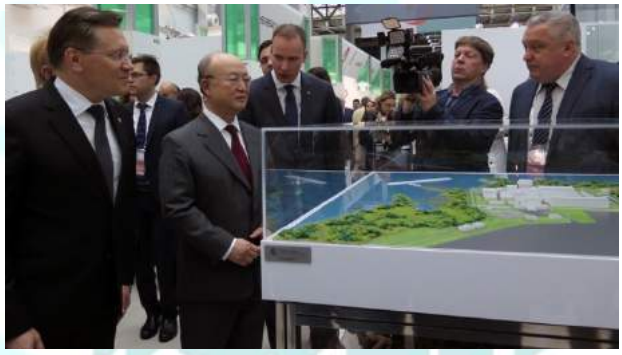
IAEA Director General Yukiya Amano visited Sochi yesterday to take part in the opening of the 10th ATOMEXPO nuclear power forum and to inaugurate the third Russia-IAEA Nuclear Management School. While in Sochi, Mr Amano met President Vladimir Putin.

ATOMEXPO is an international forum for discussion on the modern nuclear power industry, organized by Russia's State Atomic Energy Corporation ROSATOM. Industry leaders, representatives of international, national and public organizations, Russian and foreign companies, and experts in this field attend it every year.

"The Agency remains committed to helping the world make optimal use of nuclear technology to generate low-carbon energy for development, and to counter the effects of climate change," Mr Amano said during his speech at the opening.

At the opening too, IAEA Deputy Director General and Head of the Department of Nuclear Energy Mikhail Chudakov talked about the role of nuclear power in the future. He highlighted the IAEA's assistance package for countries considering adopting nuclear power, giving an overview of the IAEA's Milestones Approach and Integrated Nuclear Infrastructure Review (INIR) missions.

Mr Chudakov discussed the digital future of nuclear power plant control systems, sharing the IAEA's activities related to the design and application of instrumentation and control systems, which monitor all aspects of a nuclear power plant's health.



Director General of ROSATOM Alexey Likhachev (left) and IAEA Director General Yukiya Amano at ATOMEXPO in Sochi, Russian Federation, 14 May 2018. (Photo: C. Brady/IAEA)

"We have to keep our eyes on developments [in instrumentation and control systems] and gather sufficient evidence that these technologies and solutions are mature enough for applications in our industry," Mr Chudakov said. "The IAEA stands ready to support the global nuclear community in this crucial field."

More experts in nuclear

In conjunction with the ATOMEXPO forum in Sochi, the week-long Russia–IAEA Nuclear Energy Management School for managers in nuclear organizations took place. The school's aim is to ensure that the next generation of nuclear professionals acquire the knowledge and expertise to manage complex nuclear programmes efficiently and safely.

"Ensuring the availability of highly qualified staff to assume responsibility for the safe, secure and sustainable operation of nuclear facilities in the coming decades is extremely important," Mr Amano said during his opening speech at the school. "We also need to ensure that critical knowledge is not lost when experts retire."

Mr Amano said that sharing and maintaining specialist knowledge is a challenge both in countries with established nuclear power programmes and newcomer countries — countries considering introducing nuclear power.

The IAEA organized the first Nuclear Energy Management School, together with the International Centre for Theoretical Physics, in Trieste, Italy in 2010 and it has since taken place annually in the United Arab Emirates, Japan, the United States, South Africa and Russia. The 21 Nuclear Energy Management Schools held so far have trained more than 700 young professionals from both newcomer and expanding countries. The Schools are open to applicants from all IAEA Member States.

REGIONAL TRAINING COURSE IN MAURITIUS TO HELPS AFRICAN COUNTRIES STRENGTHEN RADIOTHERAPY SAFETY

模里西斯舉辦區域性訓練課程以協助非洲國家強化放射療法之安全性

Participants of the African Regional Training on Prevention of Accidents and Errors in Radiotherapy. (Photo: Ministry of Health and Quality of Life)

Radiotherapy professionals from 13 hospitals in 10 African countries recently developed plans, with IAEA support, to improve safety in their facilities.

The 25 professionals developed the plans during a regional training course held 16-20 April 2018 in Port Louis, Mauritius. The course was hosted by the Ministry of Health and Quality of Life of Mauritius, and Health Minister Mohammad Anwar Husnoo emphasised that recognizing and learning from errors was the basis for improving safety.

“In order to prevent accidents, it is important to learn from accidents that have occurred previously and to ensure that preventive actions are implemented in a clinical setting,” he said.

The participants learned about tools that can help improve radiotherapy safety and quality and incorporated these in their safety plans.

Health Minister Mohammed Anwar Husnoo addresses participants. (Photo: Ministry of Health and Quality of Life)

Though radiotherapy generally is a safe medical procedure that benefits cancer patients around the world, significant errors with a negative impact on the patient and the radiotherapy facility can occur.

The number and severity of safety incidents indicate a radiation oncology facility’s safety and quality performance. Robust safety systems tailored to each facility aim to reduce such risks.

Radiotherapy experts from Australia and the United States taught the course, which included the use of adapted analytical methods often used in engineering. Such methods help determine root causes and avoid the repetition of mistakes.

Participants also practiced using IAEA safety tools such as the Safety in Radiation Oncology reporting and learning system and the Quality

Assurance Team for Radiation Oncology methodology.

The training was financed through the IAEA technical cooperation programme.

IAEA COMPLETES 3-YEAR PROJECT TO MODERNIZE SAFEGUARDS IT SYSTEM

國際原子能總署透過 3 年計畫完成核子保防資訊系統現代化

The International Atomic Energy Agency (IAEA) has completed a three-year project to revamp its Safeguards information technology system to be more effective in its work to ensure the peaceful uses of nuclear technology.

IAEA inspectors contribute to international peace and security by applying Safeguards—a set of technical measures—to help prevent the non-peaceful use of nuclear material and technology. However, the demand on the IAEA's Department of Safeguards continues to increase as more States seek to utilize the benefits of nuclear science and technology.

The €41 million Modernization of Safeguards Information Technology project (MOSAIC), whose completion was marked at a presentation to IAEA Member States in Vienna yesterday, was launched in 2015. Employing 150 in-house professionals, the project developed more than 20 unique software applications to make Safeguards more effective, efficient and secure.

"The IAEA budget is not keeping pace with that growing demand, so it is essential that we make optimal use of advanced technology," IAEA Director General Yukiya Amano said at the presentation. "We are making more use of satellite imagery, enhanced data collection and remote monitoring techniques. We also continue to strengthen information collection and analysis."

Director General Amano added: "MOSAIC will ensure that the Safeguards IT system supports all implementation processes well into the future, allowing better planning, conducting, reporting, and quality assessment of Safeguards activities."

The upgrades come as demand for IAEA Safeguards work continues to climb worldwide. Between 2010 and 2017, the amount of nuclear material under IAEA Safeguards increased by over 20 per cent. In 2017, Safeguards staff operated in 182 States, compared with 176 States in 2010, and conducted more than 2000 inspections.

MOSAIC has provided a suite of modern software applications, streamlining and integrating the processes of planning, performing activities, and reporting.

These applications also facilitate the collection and analysis of Safeguards-relevant information. For example, in the past the IAEA collected tens of thousands of pieces of open source

information per year. Thanks to MOSAIC software, that figure is now 140 million.

States with Safeguards agreements are required to declare their nuclear facilities and material to the IAEA. Processing such declarations and making the information available to IAEA experts used to be very time consuming. Now, these can be analysed immediately upon receipt.

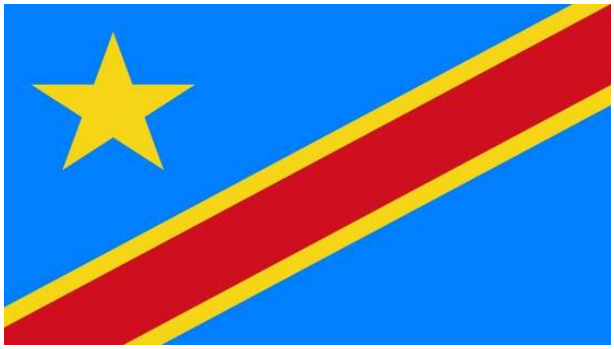
MOSAIC has also enabled the IAEA to digitize the hundreds of thousands of documents on its verification work—records the Agency must keep on file. "Before MOSAIC, we used to have to go to the filing room, but with MOSAIC it's like a one-stop service," said Lai San Chew, an IAEA Safeguards Inspector. "You just click and you can get the information on the computer. It saves a lot of time."

Work carried out as part of MOSAIC has also strengthened Safeguards information security – which is increasingly important to meet the growing number and complexity of cyber threats. MOSAIC ensures all confidential Safeguards information is well protected within an autonomous IT environment.

"The volume and variety of formats in information technologies have increased, as have the challenges of cybersecurity. There was definitely a need to modernize our IT and that is exactly what MOSAIC has done," said John Coyne, Director of the Office of Information and Communication Systems, Department of Safeguards. "We are now fully ready to meet the challenges of 21st century Safeguards."

IAEA REVIEW RECOMMENDS SAFETY IMPROVEMENTS TO THE DEMOCRATIC REPUBLIC OF CONGO'S RESEARCH REACTOR

國際原子能總署就剛果民主共和國研究用反應器複查給予安全改善建議



An International Atomic Energy Agency (IAEA) team of experts said organizational and technical measures are needed to improve the safety of the Democratic Republic of Congo's research reactor, which has not been in operation since 2003.

An Integrated Safety Assessment of Research Reactors (INSARR) peer review of the CREN-K research reactor at University of Kinshasa was held from 7-9 May 2018 at the request of its owner and operator, the General Commissariat for Atomic Energy (CGEA). The mission followed a previous INSARR held in 2004, and several follow-up missions conducted from 2007 to 2015.

The INSARR mission assessed the reactor's safety status based on the IAEA safety standards. The team focused on the implementation of recommendations provided by earlier IAEA safety missions, and noted limited progress.

The team recommended that organizational and technical measures be taken to ensure the safety of the reactor in its current shutdown state.

The team also recommended that regulatory, organizational and technical improvements be implemented, particularly considering the country's decision to bring the reactor back into operation.

"We appreciate the IAEA's long-standing assistance and CGEA is committed to implementing the recommendations shared," said CGEA General Commissioner Vincent Lukanda.

The five-member INSARR team comprised experts from Belgium, Egypt, France and Morocco and the IAEA. It made several recommendations, including:

- an effective regulatory supervision, including licensing and an inspection programme, should be established;
- the organisational structure for reactor operation, including a training and qualification programme for reactor staff, should be improved;
- adequate human and financial resources for reactor safety should be ensured;
- reactor safety documents and programmes should be developed and updated. This includes operating instructions, safety analysis, operational radiation protection and emergency preparedness and response;
- reactor safety systems and components that have been out of service for several years should be

refurbished to resolve technical problems.

The 1 MW TRIGA MARK II reactor was built in 1972 for research, education, training and radioisotope production. It has been operated for about 3,500 hours.

About INSARR Missions

INSARR mission is an IAEA peer review service, conducted at the request of a Member State, to assess the safety of research reactors based on IAEA safety standards. General information about INSARR missions can be found on the IAEA Website.

IAEA and Tokai University Expand Cooperation on Nuclear Safety Education

國際原子能總署與日本東海大學就核能安全教育方面擴大合作

Tokai University Chancellor Kiyoshi Yamada and IAEA Deputy Director General, Juan Carlos Lentijo signing the Practical Arrangements agreement. (Photo: D. Calma/IAEA)

The IAEA and Japan's Tokai University have entered an agreement to expand their cooperation in nuclear education to strengthen nuclear safety.

Juan Carlos Lentijo, IAEA Deputy Director General and Head of the Department of Nuclear Safety and Security and Tokai University Chancellor Kiyoshi Yamada, signed a Practical Arrangements agreement on 27 April 2018 at the IAEA's headquarters in Vienna.

Tokai University has conducted training courses on the IAEA safety standards taught by IAEA staff since 2014, implemented with the financial support from Japan.

In addition to IAEA assistance to Tokai University's training courses on the IAEA safety standards, the agreement includes collaboration in capacity building and research, the development of a nuclear safety education programme and the exchange of expert support and information. The cooperation will consider the lessons learned from the 2011 accident at the Fukushima Daiichi Nuclear Power Station.

"Our cooperation with Tokai University enables future nuclear professionals to build a solid understanding of what is needed to strengthen nuclear safety before they start their careers," Lentijo said.

Yamada added: "We look forward to expanding our cooperation with the IAEA and in this way make a contribution to enhancing nuclear safety both in Japan and globally."

The agreement is valid for three years and can be extended.

核能署每月新聞稿-2018 年 5 月

Japanese State Minister Tadahiko Ito visits the NEA to discuss further co-operation

日本環境大臣(TADAHIKO ITO)拜訪核能署尋求合作契機

Mr Tadahiko Ito, State Minister of the Cabinet Office and of the Environment, Japan visited the NEA on 3 May 2018 to meet with NEA representatives including Deputy Director-General and Chief Nuclear Officer Daniel Iracane, Deputy Director-General for Management and Planning Masahiko Fujihara, and Deputy Head of the NEA Division of Radiological Protection and Human Aspects of Nuclear Safety Ted Lazo. State Minister Ito thanked the NEA for its contributions to the recovery of Fukushima after the Great East Japan Earthquake, and discussed possible follow-up to the 2016 NEA workshop on "Post-accident Food Safety Science" held in Fukushima. In particular, the Minister expressed his thanks for the NEA's support for the Soma Agricultural High School students who took part in the workshop, and underlined the importance of taking care of the younger generation during the Fukushima prefecture recovery process. The State Minister also gave an update on the impressive progress with off-site decontamination in the surrounding areas of the Fukushima Daiichi Nuclear Power Plant and a nuclear emergency response exercise to be held in Japan later this year.

Dr Iracane outlined ongoing work towards developing an international instrument to formalise the framework for post-accident food management and the second NEA Workshop on Stakeholder Involvement in Nuclear Decision Making to be held in 2019.