

Abstracts for Peter Woods' talks

U2017 Global Uranium Symposium, on August 21-25, 2017 in Casper, Wyoming

1. *Tuesday: IAEA's uranium related activities worldwide*
2. *Wednesday: Uranium supply and demand: the NEA/IAEA 'Red Book'*
3. *Wednesday: General overview of IAEA's activities in uranium In Situ Leach/Recovery*
4. *Friday: World overview of uranium In Situ Leach/Recovery*

IAEA's uranium related activities worldwide

Peter Woods, IAEA

The International Atomic Energy Agency (IAEA) supports good practice in uranium mining and production around the globe. Whilst its safety standards and guides for radiation protection and waste management are well known, it also produces technical guidance and acts as a collector and distributor of information on geological, technological, environmental and regulatory aspects of the uranium production cycle, in all its various phases. Further, IAEA Technical Cooperation projects are run throughout the world on these topics, to inform and facilitate improved uranium production cycle practices globally.

Uranium supply and demand: the NEA/IAEA 'Red Book'

Adrienne Hanly and Peter Woods (presented by Peter Woods)

The 26th edition of "Uranium 2016: Resources, Production and Demand", the "Red Book", was released in November 2016. This well-recognised world reference on uranium was jointly prepared by the Nuclear Energy Agency of the Organization for Economic Co-operation and Development (OECD-NEA) and the International Atomic Energy Agency (IAEA). The report provides analyses and information from 49 countries. The new edition provides a thorough review of world uranium market fundamentals and presents data on global uranium exploration, resources, production and reactor-related requirements. It offers information on established uranium production centres and mine development plans, as well as projections of nuclear generating capacity and reactor related requirements through 2035.

Among the key findings in the latest report is that the total identified uranium resources as of 1 January 2015 increased by only 0.1 percent since 2013, with the resource base changing very little due to lower levels of investment and associated exploration efforts reflecting the currently depressed conditions of the global uranium market.

More than 20 countries around the globe produce uranium, with the largest producers Kazakhstan, Canada and Australia accounting for approximately two-thirds of world output. Global uranium mine production, meanwhile, had decreased by 4 percent between 2013 and 2015, though it remains above 2011 levels. The drop is due mainly to decreased production in Australia and lower output in Brazil, the Czech Republic, Malawi, Namibia and Niger. Kazakhstan, the world's largest producer, continued to increase output, although at a slower pace.

Regarding future demand for nuclear power, the Red Book's projections vary from region to region. While the Fukushima Daiichi accident led to a change of policies in some countries, nuclear power looks set to keep expanding globally both in low and high case scenarios, particularly in Asia.

While current uranium resources are more than adequate to meet the high growth scenario, doing so would "depend upon timely investments to turn resources into refined uranium ready for nuclear fuel production," according to the report, adding that "significant investment and technical expertise" would be needed "to bring those resources to market".

Acknowledgement: The Red Book can be downloaded from <http://www.oecd-neo.org/ndd/pubs/2016/7301-uranium-2016.pdf>. This abstract and presentation were given as "Red Book 2016: insights into uranium supply and demand" at the ALTA 2017 Conference held in Perth, Australia, 25-26 May 2017, <http://www.altamet.com.au/conferences/alta-2017/>.

General overview of IAEA's activities in uranium In Situ Leach/Recovery

Peter Woods, IAEA

Since the 1980s the IAEA has documented and promoted good practice uranium mining using the in situ leach or leaching (ISL, also called in situ recovery, ISR) technique, which has become one of the standard uranium production methods. ISL's application to amenable uranium deposits, in certain sedimentary formations, has grown in view of its competitive production costs and low surface impacts. It is best applied in appropriate geological and hydrogeological conditions, and by the beginning of 2015 was the origin of over 50% of the world's mined uranium.

The IAEA remains active in the field, including the release of the latest in a series of technical reports in 2016 and continuing to promote information exchange and best practice application of this important uranium production technology.

World overview of uranium In Situ Leach/Recovery

Peter Woods, IAEA

In situ leach or leaching (ISL), also called in situ recovery (ISR) uranium mining, has become one of the standard production methods for this energy metal. A recent IAEA publication provides an historical overview and shows how ISL experience around the world can be used to direct the development of technical activities, taking into account environmental considerations, and emphasizing the economics of the process, from exploration, development, operations and including responsible mine closure. The publication provides information on how to design, operate and regulate current and future projects safely and efficiently, with a view to maximizing performance and minimizing negative environmental impact.

Reference: In Situ Leach Uranium Mining: An Overview of Operations. IAEA Nuclear Energy Series No. NF-T-1.4 (2016). <http://www-pub.iaea.org/books/iaeabooks/10974/In-Situ-Leach-Uranium-Mining-An-Overview-of-Operations>

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