Uranium mining in WA

April 2013

The Federal Government approval of Toro Energy's Wiluna Uranium Project, 30kms south of Wiluna in the Mid West region of the state has re-started some discussion on issues of public concern surrounding the industry.

An important part of the work undertaken by The Chamber of Minerals and Energy of Western Australia (CME) is to provide broader information to improve understanding of the resources sector, including on uranium mining. Comprehensive documentation has been produced by various sources and is available online at the links provided at the end of this document.

The Department of Mines and Petroleum (DMP) is the primary state government agency responsible for regulating the uranium mining industry in Western Australia. Occupational and public health and radiation management are the responsibility of the Radiological Council. The export of uranium is strictly controlled by both the Australian Government through Australian Safeguards and Non-Proliferation Office (ANSO) and the Department of Resources, Energy and Tourism (DRET) and International agencies such as the International Atomic Energy Agency (IAEA).

Like all mining in WA, uranium mining is subject to royalty payments and the currently proposed rate payable as a state royalty for uranium is five per cent of the money earned.

What is uranium?

Uranium is a naturally occurring element found in trace amounts in rocks, soil, water and air. In its natural state uranium is weakly radioactive and is the heaviest naturally occurring element known to man. 1kg of uranium can produce the same power generating capacity as up to 20,000 tonnes of coal. The ore extracted at the mine is refined onsite into uranium oxide (sometimes called yellowcake) before being exported. Uranium oxide cannot directly be used as fuel for a nuclear reactor but must be converted and enriched then manufactured into fuel rods. Uranium enriched for power generation cannot be used for nuclear weapons.

Safety

DMP's primary objective is to ensure that the community and workers are safe and that any mining meets all safety, health and environmental standards, consistent with relevant state and federal legislation, regulations and policies. DMP and the Radiological Council in Western Australia adopts regulations formulated at the highest international levels to ensure that risk to workers, communities and the environment from uranium mining is minimised.

Consistent with international standards, DMP enforces strict exposure limits; companies must not allow the public to be exposed to more than 1 milliSieverts per year. Data from Australia's longest operating uranium mines, Ranger and Olympic Dam, shows that people living in the nearby communities of Jabiru and Roxby Downs typically receive about 0.01 or 0.02 milliSieverts of mining-originated radiation per annum – a tiny fraction of the allowable limit.

Measures implemented to ensure radiation safety for workers and the communities living near mine sites and transport routes include:

- A Radiation Management Plan prior to any operation covering the mine, processing plant and transport.
- Employment of a permanent specialist Radiation Safety Officer whose job it is to ensure that all regulations and conditions are adhered to and that best practice is employed at every step.
- Employee induction and training in matters regarding radioactivity and radiation.
- Comprehensive emergency planning and preparedness.
- Comprehensive environmental monitoring; and
- Strict regulation of the mining, processing and transportation of radioactive materials, with oversight by the Resources Safety Division of DMP and the Radiological Council to ensure compliance.

Environment

Mining of any resource in Australia is governed by extremely rigorous environmental assessment and approval processes. Western Australia's uranium industry is no different. Before a company can explore or mine for uranium, it must demonstrate to state and federal agencies that it will manage the environment to the highest standard. Uranium mine operators in WA require a minimum of 12 state approvals and three national government approvals before mining can proceed.

Environmental approval timeline for the Toro Energy project at Wiluna

October 2009
Toro submits a Referral for its Wiluna Uranium Project to the Western Australian Environmental Protection Authority (EPA) and the Federal Department of the Environment, Water, Heritage and the Arts (DEWHA).

June 2010
Environmental Scoping Document (ESD) released for a two week public review. The ESD serves as the basis for the preparation of the Environmental Review and Management Program (ERMP).

Sept 2010
The EPA approves the ESD allowing Toro to proceed with the preparation of an ERMP.

July 2011
The Project's ERMP is placed on public exhibition for fourteen weeks. The ERMP describes the project proposal and examines the likely environmental impacts and proposed environmental management procedures associated with the project.

May 2012
The EPA recommends that the project be given approval to proceed, subject to 8 environmental conditions. The EPA's report to the WA Minister for Environment is open for a two week public appeal.

Sept 2012
WA Minister for Environment announces his determination on the appeals against the EPA report. The minister allows the appeals in part.

Oct 2012
WA Minister for Environment grants state environmental approval to the project, subject to additional conditions.

April 2013
Federal Environment Minister grants federal environmental approval to the project, subject to conditions.

The environmental approval process at state and federal level includes detailed submissions regarding: radiation management, transport, mine closure and rehabilitation, groundwater and water supply, surface water, air quality, flora and fauna, habitat and Indigenous heritage. This is a public process. Anybody can challenge or comment on the proposals and can expect their views to be taken seriously and given expert consideration.

When a project is approved and mining commences, it continues to be subject to monitoring and reporting to ensure compliance with approval conditions and tracking of its overall environmental performance.

Exploration and mining operations can be suspended by the state or federal governments if companies do not meet their conditions.

Transport

Chemicals, rare earths and radioactive materials are transported safely and securely on Australian roads every day. Since the early 1980s, approximately 11,000 containers of uranium have been transported to ports at Adelaide or Darwin with no incidents involving a spillage of uranium oxide over that period. There have been no uranium transport incidents that have posed any risk to public health or to the environment

Transport of uranium is regulated by federal and state laws in accordance with a transport code created by the Commonwealth's nuclear industry regulator, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).

The transport of uranium is regulated and monitored by:

- The Australian Safeguards Non-proliferation Office (ASNO) which manages adherence to safeguards and related protocols.
- The Commonwealth Department of Resources Energy and Tourism (DRET) which manages and monitors export controls.
- The Australian Maritime Safety Authority (AMSA) which oversees packaging, stowage, segregation etc.
- Australian Customs and Border Protection because uranium oxide concentrate is a restricted export under the Customs (Prohibited Exports) Regulations 1958.

Federal, state and territory approved Transport Plans are required for all domestic movements of uranium oxide concentrate from mine site to load port. Major national road transport companies are utilised by all four operating mines. All personnel are fully trained and accredited and work to a harmonised approach aligned through transport plans approved by ASNO, states and the Northern Territory. In WA, the Transport Management Plan must be approved by the Radiological Council, an independent statutory authority appointed under the Radiation Safety Act in Western Australia.

For transport, uranium oxide concentrate (UOC) is encapsulated inside steel drums which are strapped, using Kevlar onto pallets into plastic lined shipping containers. The containers are locked and are not opened, unless for official inspections, until they reach their overseas destination.

Australian uranium companies adopt a common approach to a web-based lashing and securing system, securing the drums into the shipping containers. All systems are AMSA approved.
Transport is characterised by:

- Pre-packing inspection by the shipper following receipt at mine site. Pre-packing inspection has a particular focus on the external and internal quality of each container and on ensuring packer obligations under AMSA marine orders and the International Maritime Dangerous Goods (IMDG) Code requirements are met.
- Post packing inspection by the shipper for overall cleanliness and contamination check inspections prior to departure from mine site.
- There are visual checks at all stages of transfer throughout the supply chain

Waste management

In addition to radiation protection standards, the mining and mineral processing of uranium is subject to broader environment protection standards that apply to a range of possible contaminants.

ARPANSA's 'Code of Practice and Safety Guide: Radiation Protection and Radioactive Waste Management in Mining and Minerals Processing' requires that in conjunction with the Radiation Management Plan, a specific Radioactive Waste Management Plan (RWMP) should be developed and approved by DMP and the Radiological Council. The essential elements of the RWMP are:

- An outline of the processes generating waste.
- A description of waste including nature of material, contaminants, quantities and rate of production.
- A description of the environment into which the waste will be discharged or disposed, including the baseline radiological characteristics.
- Heritage (social and cultural) and land use (present and potential).
- A description of the proposed system for waste management including the facilities and procedures involved in the handling, treatment, storage and disposal of radioactive waste.
- A program for monitoring the concentration of radionuclides (radioisotope, a radioactive element) in the environment and assessment of radiation doses to members of the public arising from waste management practices.
- Predictions of environmental concentrations of radionuclides and radiation doses to the public from the proposed waste management practice, including demonstration that the statutory radiation protection requirements will be met both now and in the future.
- Contingency plans for dealing with accidental releases and the circumstances which might lead to uncontrolled releases of radioactive waste in the environment.
- Contingency plans to cover cases of early shutdown or temporary suspension of operations.
- A schedule for reporting on the waste disposal operation and results of monitoring and assessments.
- A plan for the decommissioning of the operation and associated waste management facilities, and for the rehabilitation of the site.
- A system of periodic assessment and review of the adequacy and effectiveness of the RWMP to take account of potential improvements consistent with best practicable technology.

All mining operations (uranium included) are required to submit regular reports to DMP to facilitate compliance monitoring. In most cases, it is a condition of the licence that the company provides an Annual Environmental Report to DMP. Under the environmental approvals from the WA and federal governments, extra reporting on environmental management and monitoring is required over and above the DMP requirements.

Use

Australia's exports of uranium are strictly compliant with the safeguards systems applied by the International Atomic Energy Agency (IAEA). All exports of Australian uranium are covered by binding bilateral safeguards agreements which ensure Australian uranium is only used for peaceful purposes and does not contribute to any military aim. The bilateral safeguards require receiving countries to account for the Australian uranium at every stage of the nuclear fuel cycle.

Toro Energy

A final commitment to develop this $269m project is expected to be made before the end of 2013 subject to uranium market conditions. Toro's currently approved Wiluna project is based on the Lake Way and Centipede deposits; where the resource is between 1m and 8m below the surface allowing for open pit mining with a life of around 14 years. There are a further 3 deposits available to the operation which would extend the mine life to beyond 20 years. The construction period of up to 18 months proposed for 2014 will involve a workforce of some 350 people. The operating workforce will be around 170 people. First sales are targeted by the end of 2015.

The product is scheduled to be transported at a rate of two trucks (four containers) per month, by road via Kalgoorlie Boulder and the Nullarbor to Port Adelaide in South Australia.

CME position

CME supports a safe and properly regulated uranium industry which will broaden the state's resource export base, deliver jobs and opportunities for Western Australians and, importantly, help reduce global carbon emissions.

WA is well positioned to become an important part of Australia's uranium industry. According to Geoscience Australia, WA holds approximately 6% of the country's total uranium resources. By far the largest percentage of uranium resources are in South Australia, at around 78% (as at Dec 2011). As of June 2012, DMP estimates that WA has known resources of approximately 211,000 tonnes of uranium.

In 2011/12, more than $78m was spent in WA on uranium exploration. There are 36 companies currently exploring for uranium in WA.

CME works with members to build positive and mutually beneficial relationships between industry, government and the community. CME is working with the industry to satisfy the comprehensive environmental and safety requirements of regulators and with community leaders to provide information about the benefits of the emerging uranium industry.

Other sources of information

- Department of Mines and Petroleum (DMP) www.dmp.wa.gov.au
- Resources Safety Division www.dmp.wa.gov.au/6611.aspx
- Radiological Council www.radiologicalcouncil.wa.gov.au
- Department of Environment and Conservation (DEC) www.dec.wa.gov.au
- Environmental Protection Authority (EPA) www.epa.wa.gov.au
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) www.environment.gov.au
- Department of Resources, Energy and Tourism (DRET) www.ret.gov.au
- The Australian Nuclear Non- Proliferation Office (ASNO) www.asno.dfat.gov.au
- Australian Uranium Association (AUA) www.aua.org.au
- Toro Energy www.toroenergy.com.au
- International Atomic Energy Agency www.iaea.org

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