

# Rio Tinto

## Product Stewardship in Uranium: A Way for the Industry to Demonstrate its High Performance

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# Product Stewardship

- *“**Product stewardship** is a concept whereby environmental, health, and safety protection centers around the product itself, and everyone involved in the lifespan of the product is called upon to take up responsibility to reduce its environmental, health, and safety impacts”* (wikipedia)
- Alternative: A chain is only as strong as its weakest link: something which affects one part of the chain affects all parts of the chain so make sure all are excellent (Frank)

# Examples of Product Stewardship

- Green Lead: *“manages the impacts of lead and lead products, starting with lead acid batteries, throughout the entire life cycle from the lead mine through smelting, manufacturing, use and recycling. In the commodity world it is a leader on the control of the entire product chain to attain sound environmental management and sustainable social development”*



- Responsible Jewellery Council: *“is an international, not-for-profit organisation established to reinforce consumer confidence in the jewellery industry by advancing responsible business practices throughout the diamond, gold and platinum group metals jewellery supply chain”*

# What Characterises Good Product Stewardship

- Strong HSE performance throughout all aspects of the product chain (cradle to grave)
- Performance is communicated within the entire chain
- Poor performance is not deemed acceptable by other sections of the chain
- Performance is fully justifiable and can be demonstrated
- Performance may be communicated externally for whole of chain benefits

# Uranium and the Nuclear Fuel Cycle – Where we Stand

- Mining – Subject to opposition both on the basis of what we do but also on other aspects of the nuclear fuel cycle
- Customers – Subject to opposition both on the basis of what they do but also on what is perceived to be happening in mining
- *"Japan is not the sole nation responsible for the current nuclear disaster. From the manufacture of the reactors by GE to provision of uranium by Canada, Australia and others, many nations are implicated."-- Yuki Tanaka, 28 March 2011, The Atomic Bomb and "Peaceful Use of Nuclear Energy", The Asia-Pacific Journal, Vol. 9, Issue 13, No. 2. (from FoE website)*

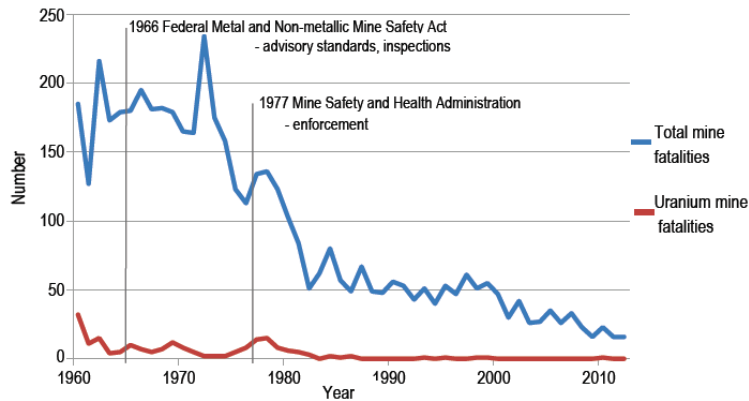
# Unique Aspects of Uranium – Pro's

- Only product with international verified tracking from cradle to grave
- Strong connections and single path throughout the product cycle
- Any recycle tightly controlled
- No military use of Uranium under safeguards arrangements
- Very high energy per unit volume
- Comparatively small waste volumes from product use
- Low carbon energy source
- Stewardship already being pursued by customers
- FTSE4Good Uranium Mining Criteria

# Unique Aspects of Uranium – Con's

- Public perception of risks (uranium mining dirty, reactors dangerous, radioactive waste, nuclear weapons, terrorism)
- Entrenched opposition organisations
- Intense media scrutiny
- Several stages of production prior to use
- Radioactive nature of material particularly post reactor
- Mining in sensitive areas
- Intense regulatory regimes
- Restrictions on radioactive material and increase in recycle and rehabilitation costs

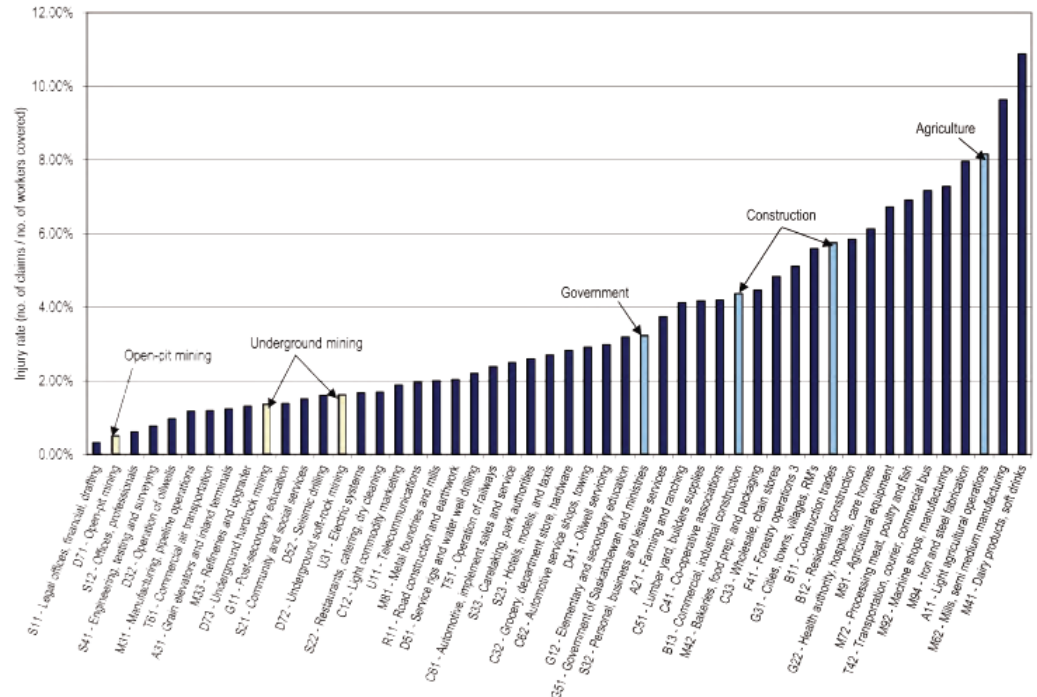
# Examples of Performance - Safety



Sources: US Department of Labor, Mine Safety and Health Administration century statistics (total), circulars and reports (uranium).

Metal and non-metal mine fatalities in the United States, 1960-2012 (OECD NEA 2014)

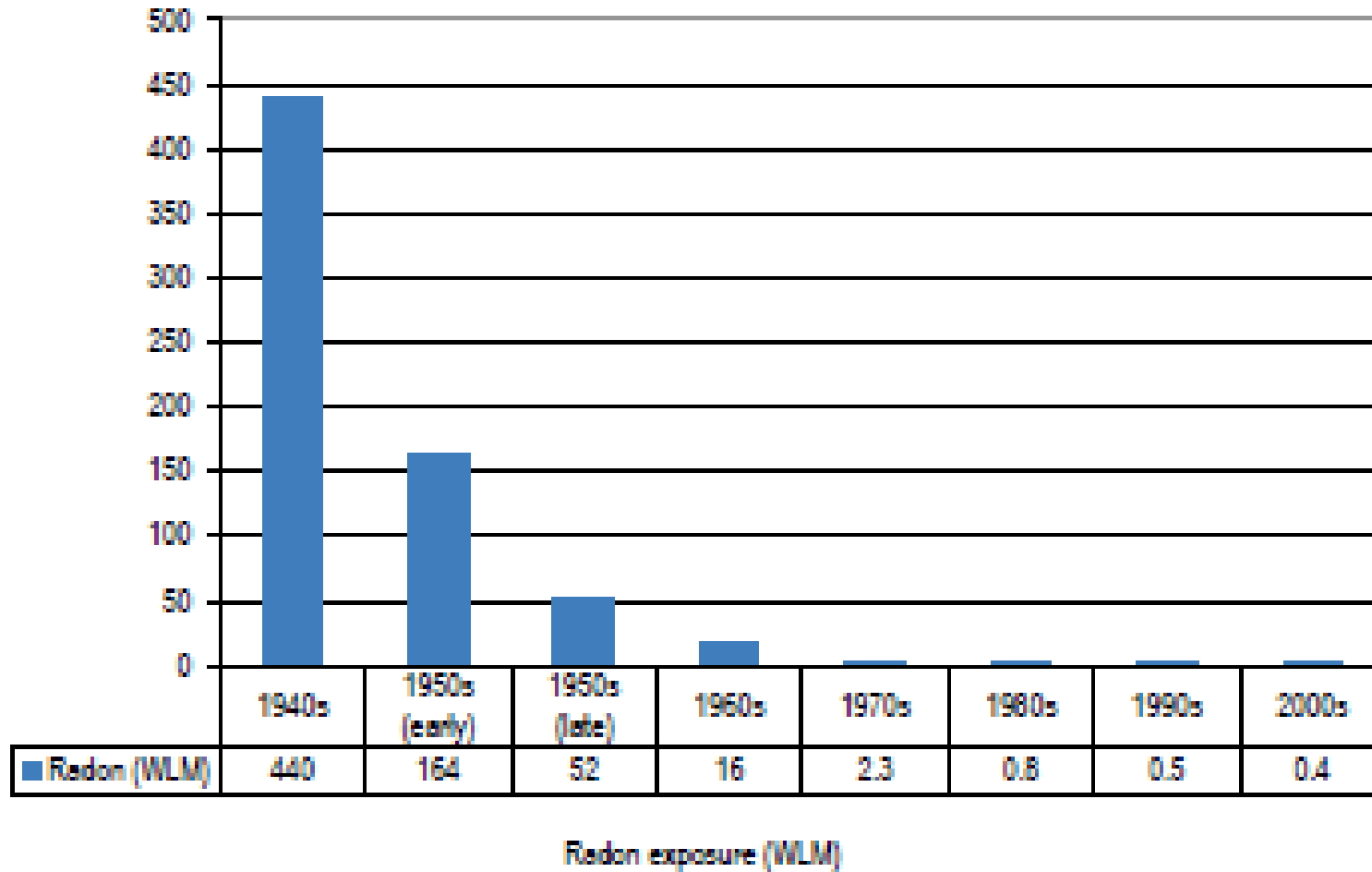
Figure 2.1. Saskatchewan injury rate by occupation (adapted from SWCB, 2010)





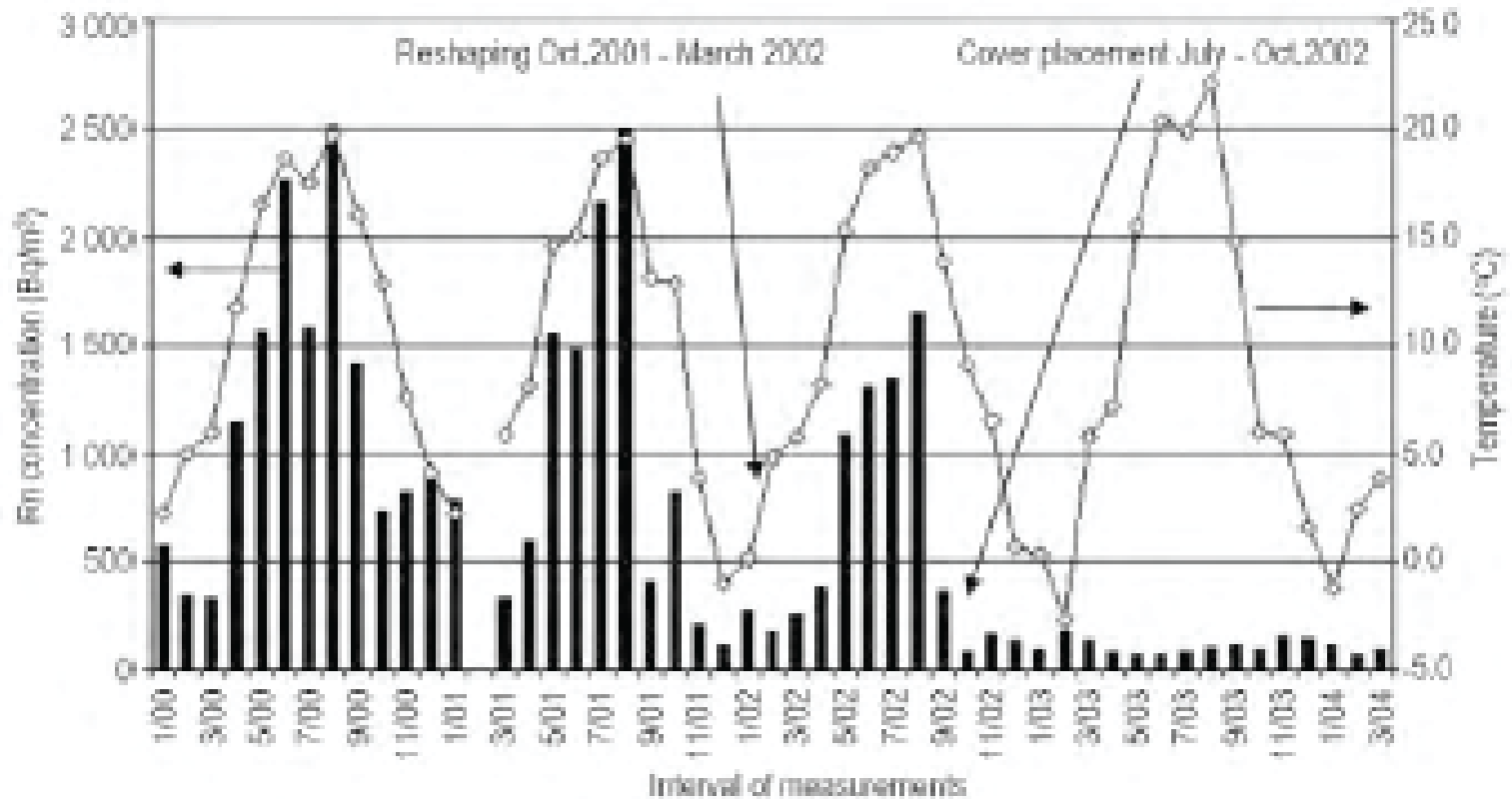
# Example of Performance - Radiation

Levels of RDP exposure in UG mines expressed in working level months (WLMs\*) in Canada from 1940 (OECD NEA2014)



# Example of Performance – Environment and Remediation

Radon concentration levels in the air close to the toe of a waste rock pile before and after remediation (OECD NEA 2014)



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# Benefits of Uranium Product Stewardship

- Provide internal and external confidence in the HSE performance of the nuclear fuel cycle including uranium mining
- Provide customers with a means of differentiating (and rewarding??) based on HSE performance
- Reduce the current approach of using the unknown as a point of attack for fuel cycle activities (ie miners being subjected to concerns on nuclear waste and reactor operators having to address perceptions of poor mining performance)
- Highlight the strong HSE performance of the nuclear fuel cycle in comparison with other industries
- Give a mean to share and communicate high performance case studies to highlight benefits of our industry

# Conclusion

- Product stewardship is an means for communicating the high performance on health, safety and environment of the nuclear fuel cycle including uranium mining
- It has been effective with other products and is appropriate for uranium
- Can be a vehicle for addressing public concerns across the industry
- Due to uranium's unique characteristics it has the potential to be a best practice example of product stewardship
- Work is underway in the international arena to progress uranium product stewardship and it represent a unique opportunity to provide whole of industry benefits