

# Uranium & radiation at the DZP

**FACTS!**

**Q** What are the radioactivity levels in the DZP ore?

**A** **The DZP ore contains naturally occurring uranium and thorium.**

The concentrations are elevated compared to the Australian soil average, but insufficient to be categorised as a feasible uranium or thorium deposit.

The ore contains approximately 80 to 160 parts per million (ppm) uranium and 250 to 500ppm of thorium.



**Q** What is background radiation?

**A** **Radioactivity is a natural part of everyday life. It exists in the air we breathe, the water we drink and the food we eat. It exists in soils and rocks and is in all building materials. The human body contains radioactivity.**

The earth is also constantly exposed to cosmic radiation from outer space.

Artificial exposure to radiation occurs through medical imaging, such as from x-rays and CT scans.



**Q** What does radiation do to you?

**A** **Radiation is essentially energy moving through space and may be able to penetrate various materials.**

Exposure to radiation occurs when the radiation deposits its energy in human tissues.

Very high levels of radiation (not found naturally) can result in cell death – this is called “acute” exposure.

Low levels may result in the formation of defects in cells, which may result in later years as cancers, however, the chances are very small and unmeasurable.

**Q** Will radioactivity from the project impact on the surrounding environment?

**A** **No, the expected levels of radioactive emissions from the project have been calculated and shown to be so low that the impact will be indistinguishable from the naturally occurring background levels at the project boundary.**

During operations, Alkane will confirm the modelling predictions via the results of the environmental radiation monitoring network.



**Q** What are you doing with the uranium?

**A** **Alkane has no intention of extracting uranium from the mined ore.**

Uranium and thorium in the ore will end up in the residue storage facility.

The concentrations of uranium and thorium in the residue will be less than the concentrations in the mined ore because the residues are diluted by the addition of the neutralising limestone.



**Q** What environmental radiation monitoring are you doing?

**A** **Alkane has established a network (inside and outside of the project site) of environmental monitors which measure the naturally occurring radioactivity levels in the region.**

Sampling is conducted for gamma radiation, radon and thoron in air concentrations and deposits of radionuclides in dust.

The monitoring network has been in place for approximately two years and results are being used to establish baseline data for reporting.

Results show that the levels are consistent with naturally occurring levels that exist around Australia.

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**Q** Are you saying that the current levels in DZP ore are dangerous?

**A** **No, the levels are very low and do not constitute a health or environmental risk.**

The levels are so low that the uranium is considered to be an impurity.

Controls such as regulatory oversight and routine monitoring are conducted, and will ensure radiation levels remain low.



**Q** Will workers and the public be safe during mining and processing - and what precautions will you be following during this time?

**A** **Yes, workers and the public will be safe as the radiation levels will be so low.**

To ensure the safety and health of workers, the public and the environment, Alkane will develop a radiation management plan as part of its overall safety management system for the mining and processing operations.

The radiation management plan will outline aspects such as design requirements, safe work procedures, induction and training requirements, and the radiation monitoring programs.

The radiation management plan will be regularly reviewed by the competent authority, with monitoring and dose results reported as required (at least annually).

**Q** What is a safe level of radiation?

**A** **Natural background levels are approximately 2.4mSv per year (note that in some areas of Australia, the background levels are up to 10mSv per year).**

The internationally accepted annual exposure limit for workers is 20 milliSieverts (mSv) per year (above natural background levels).

The internationally accepted annual dose limit for the public from an operation is 1mSv per year (above natural background levels).

A millisievert (mSv) is a measurement of a dose of radiation

\*Maximum dose received in a year

**.03 mSv\***  
Estimated contribution of DZP (at closest residence)

**.04 mSv**  
Chest x-ray

**.11 mSv**  
Return plane trip Sydney-London

**1.5-2 mSv\***  
Natural environment in Australia  
.6 - 1.1 mSv - Air  
.3 mSv - Ground  
.3 mSv - Cosmic  
.2 - .25 mSv - Food



**Q** What will happen to the radioactive waste produced?

**A** **The final waste streams are not classified as radioactive waste.**

It should be noted that no additional radioactive material is produced through the process. The radioactive elements (uranium, thorium and their decay products) that enter the process from the mined ore will end up in the residue storage facility.

The solid waste from the processing streams will be combined into a single tailings stream which will be disposed of in the residue storage facility.

All wastes will be safely and responsibly handled in accordance with the radiation management plan which will be reviewed and approved by the competent authority.

## More information

Uranium and radiation protection is complex and covers a number of scientific disciplines. This document is meant as a summary for a community audience. More detailed information can be found on uranium and radiation from:

[www.epa.nsw.gov.au/radiation](http://www.epa.nsw.gov.au/radiation)  
[www.arpana.gov.au](http://www.arpana.gov.au)  
[www.ansto.gov.au](http://www.ansto.gov.au)

## Contact Us

If you have any more questions regarding the DZP project, contact:

**Mike Sutherland** (General Manager, NSW)  
**P:** 02 6882 2866  
**E:** [msutherland@alkane.com.au](mailto:msutherland@alkane.com.au)  
Level 2, 21 Church Street, Dubbo NSW 2830