Environmental Impact Statement (EIS) Explained – Air Emissions incl Dust

Background

The Dubbo Zirconia Project (DZP) is the mining and minerals processing of the metals zirconium, niobium and rare earths on site at Toongi, located about 25km south of the city of Dubbo in the Central West of NSW.

The EIS prepared for the DZP serves two primary roles. Firstly to describe the nature, extent and impacts of the project and secondly to demonstrate that the project conforms to very strict environmental guidelines, standards and criteria set by the relevant government departments to ensure the safety of communities and the environment.

Alkane's approach to environmental impact

The safety of our staff, the community and the environment is paramount. Alkane is committed to compliance with all laws and regulations in relation to the environment and occupational health and safety and seeks to minimise their impact at all times.

In assessing the potential impact of the DZP, Alkane has taken a conservative approach. As a result, the predicted impacts presented in the EIS represent 'worst-case' emission levels. In most instances therefore, the actual emission levels will be much less and therefore well below the criteria or standards set by NSW, Australia and international environmental protection authorities.

Air emissions

Air emissions resultant from the DZP may be classified as follows.

- Particulate matter, which may remain airborne or be deposited as dust.
- Gases produced by the processing operations.
- Radiation.
- Greenhouse gases.

Some local residents have expressed concern about the increases to these emissions as a result of DZP activities. The impact of each of these emission types is detailed in the information below.

Particulate matter (dust)

The environmental consultants responsible for modelling the expected environmental impacts of the DZP demonstrate that Alkane's activities in the Dubbo region would result in only a very small increase in the concentration of both airborne and deposited dust.

For example, the background (natural) concentration for PM_{10} (dust particles suspended in the air of 10µg in diameter or less) is16 $\mu g/m^3$. The modelling of PM_{10} emissions to be generated by the DZP completed for the EIS predict that, on operation of the DZP, the concentration of PM_{10} received at surrounding residences will only increase to between 16.1 and 17.1 $\mu g/m^3$. This is both a very small incremental increase (10% or less) and well below the criteria of 30 $\mu g/m^3$ set by the NSW Environment Protection Authority.

Processing plant gas emissions

In line with Alkane's commitment to minimising impacts on the environment, clean technologies at the plant including scrubbing (a cleaning process which converts gases to liquids to control emissions) are expected to reduce gas emissions to zero or close to zero.

Radiation
Naturally Occurring Radioactive Material (NORM) is present within the environment around the Central West, including the rocks and soil in Dubbo, Toongi and Wellington and in the clays in the Macquarie River.

The unit of measurement for an effective dose of radiation is the Sievert (Sv). Low levels of radiation already occur naturally within the environment, i.e. NORM, and according to the Australia Radiation Protection and Nuclear Safety Agency (ARPANSA) the average Australian adult will receive 1.5-2mSv of radiation per year[1] as a result of undertaking normal activities (the global average is 2.4mSv). Levels of up to 1mSv/year for the general public are considered safe by international standards.

Exposure to radiation emissions from the DZP would occur by two pathways.

- Inhalation of dust which contains trace concentrations of radionuclides hosted within the ore that is to be mined. Conservative modelling of this exposure predicts that the highest exposure received would be 0.02mSv/year.
- Exposure to radon gas emitted from the ore and products of the DZP. Radon is an inert gas that, while not emitting radiation itself, forms radioactive products when it decays[2]. Conservative modelling of this exposure predicts that at the highest exposure received would be less than 0.01mSv/year.

Radiation generated by the DZP and received at the closest residence to the DZP is estimated to be no more than 0.03mSv per year. This is well below the average radiation dose received by an Australian adult and well below the international public dose standard (1mSv per year).

Greenhouse gases
Alkane is committed to minimisation of greenhouse gas emissions as a result DZP activities. 70% of the electricity required to power DZP operations will be co-generated by using the excess heat produced by the manufacture of sulphuric acid. This approach will drastically reduce the project's environmental impact.

Mining the metals of the future

The majority of the products from the DZP are used in emissions minimisation, green technologies and to improve energy efficiencies.

Alkane's commitment to the environment

Emissions management processes have been developed in accordance with Alkane's ongoing commitment to preserving the local environment. Further information about the environmental impacts of the DZP can be found on the Alkane website at www.alkane.com.au.

[1] Developments in the Radiation Protection Regulation Relevant to Management of NORM – August 2006
[2] On average Australian adults receive 0.6 to 1.1mSv radiation dose from radon (inhaled) per year and 0.05mSv is the average dose a person gets from a flight from Sydney to Perth.