Environmental Geochemistry of Mineral Deposits

LEADER: Dr James Pope. CRL Energy Ltd

START: Leaves from Rotorua on Friday 22\textsuperscript{nd} of November

END: Finishes in Auckland on Saturday 23\textsuperscript{rd} of November

DURATION: Two days

SCOPE: This field trip will look at the environmental geochemistry of gold and coal mines between Rotorua and Auckland. In particular it will focus on:

- Rock geochemistry at the mine sites
- Mine drainages chemistry that forms at the seeps
- Downstream geochemistry
- Trace elements in mine drainage chemistry, in particular manganese and boron
- Waste rock, tailings and fly ash management
- Remediation techniques
- Active and passive water treatment

DESCRIPTION

We will leave Rotorua on the Friday morning after the conference and drive one way, overnight via several mine sites to arrive in Auckland late in the afternoon of the Saturday after the conference. Visits to active mine sites will be facilitated by environmental managers on site and the trip will be led by Dr James Pope, CRL Energy.

The North Island of New Zealand has two principle types of mining activity related to deposits of sub-bituminous coal and epithermal precious and base metals. On this field trip we will visit the largest active sub-bituminous coal mine in the North Island, Rotowaro Mine.
(Solid Energy NZ), near Huntly and a selection of active and closed epithermal gold mines including Martha (Newmont Waihi Gold) and Golden Cross mine (closed) near Waihi.

The environmental geochemistry of these deposits is diverse and likewise the mine drainages, ranging from neutral to acidic and containing trace elements such as base metals, boron and manganese.

Waste rock management at these sites ranges from the successful return of the mine sites to pasture, to innovative use of soil amendments such as bio-solids to achieve desired remediation outcomes. Water treatment at these sites includes active treatment systems such as reverse osmosis and passive treatment with bioreactors or anoxic limestone drains.

ITINERARY

TBA

SPECIAL REQUIREMENTS: Appropriate field clothing (it has been known to rain in New Zealand!) and foot ware.

MAXIMUM NUMBER OF PARTICIPANTS: 20

MINIMUM NUMBER OF PARTICIPANTS: 8

COST: $370. Cost will include, transport meals and accommodation.

FURTHER INFORMATION: For additional information contact James Pope. j.pope@crl.co.nz

ROUTE MAP
Martha open pit, Waihi - epithermal gold

Rehabilitated Golden Cross open pit – epithermal gold
Rehabilitate water management infrastructure

Passive water treatment