

25 June 2009

Ministry for the Environment
PO Box 10362
Wellington 6143

Submission on the Draft Climate Change (Stationary Energy and Industrial Processes) Regulations 2008

Dear Sir,

Introduction

Newmont Waihi Gold herewith makes a further submission on the method and assumptions used in calculating the default emissions factors for gold mining.

Under the proposed Draft Climate Change (Stationary Energy and Industrial Processes) Regulations 2008 Newmont Waihi Gold would qualify as a participant in the industrial processes sector as a gold producer.

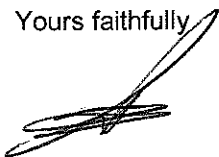
Producing gold is specifically listed as an activity in the schedules to the Act. Table 5 in Schedule 3 of the Regulations lists the default emission factors for producing gold as 0.44 tCO₂-e/t for uncalcined limestone use.

As stated on the ministry for Environment website 'Officials are aware that not all of the limestone used in gold production causes emissions. However, further information is required to identify what specific proportion of limestone use results in emissions before a more accurate emissions factor can be included in the regulations. Feedback on the accuracy of the gold-mining emissions factor is sought'.

Newmont Waihi Gold believes that the default emission factor of 0.44 tCO₂-e/t overstates the emissions from the Waihi Gold waste rock dump. The basis for this is provided in Attachment 1. Newmont Waihi Gold requests that the default emission factor either be excluded, or reduced to 0.22 tCO₂-e/t, until such time as a more accurate and reliable Unique Emission Factor can be developed. Newmont Waihi Gold offers to assist in the development of a Unique Emission Factor.

If we can be of further assistance please contact the undersigned.

Yours faithfully



Glen Grindlay
General Manager - Waihi Operations
Newmont Waihi Gold

Newmont Waihi Gold

Attachment 1. Limestone Use by Newmont Waihi Gold Operations, NZ

Treatment of Waste Rock Dumps

Limestone (CaCO_3) is used at some mines to manage the acidity of the mined waste rock. At Waihi, the waste rock is used to build the tailings storage embankment. Limestone addition is an important environmental control for acid water generation.

The chemical reaction is $\text{CaCO}_3 + \text{H}_2\text{SO}_4 = \text{CaSO}_4 + \text{H}_2\text{O} + \text{CO}_2$. The emission factor (0.44 tCO₂-e/t, Table 5, Schedule 3 in the draft regulations) is derived from the reaction of these chemical constituents. This assumes that all carbon goes out as gaseous CO₂. However some carbon (approx ½) will stay in solution as HCO₃ (bicarbonate) and CO₃ (carbonate). The chemical equations are complex and have not been fully determined for carbon emission assessment. Thus if waste rock were to be accounted the proposed emission factor (0.44 tCO₂-e/t; which assumes a 100% reaction) will overstate the amount of CO₂ produced.

A theoretical emission factor of 0.44 tonnes CO₂/tone limestone could be possible with equal or excess acid neutralising capacity (ANC), thorough mixing and perfect contact between the acidic rock and the neutralising limestone, and a correct pH range. However, in reality there will be numerous factors that would reduce the actual amount of CO₂ being emitted, such as:

- variability in limestone (and hence ANC) across the waste rock dump such that some areas may have excess ANC;
- variability of PAF nature of the waste rock;
- variability of the inherent ANC of the waste rock;
- poor mixing of waste rock and limestone;
- crusting of the limestone reducing the effective contact area for neutralisation to occur; and
- some carbon will remain in solution as bicarbonate and carbonate.