

Coal Association of New Zealand

68 Gracefield Road, PO Box 31-244, Lower Hutt, New Zealand
Telephone: (04) 570 3700; Fax: (04) 570 3701

23 December 2008

Emissions Trading Group
Ministry for the Environment
Wellington

Here is the Coal Association submission on the draft Climate Change (Stationary Energy and Industrial Processes) Regulations 2008.

If you have any enquiries, please contact Wayne Hennessy on (03) 545 1120 or w.hennessy@crl.co.nz.

Yours sincerely,



(for) Chris Baker
Chairman

**SUBMISSION OF THE COAL ASSOCIATION ON THE DRAFT CLIMATE
CHANGE (STATIONARY ENERGY AND INDUSTRIAL PROCESSES)
REGULATIONS 2008.**

INTRODUCTION

The Coal Association welcomes this opportunity to work with government to develop a durable climate change policy. The Association liaises with the government and the community, and promotes government and industry research investment to strengthen the industry's competitiveness and environmental acceptability.

We would be willing to participate in a working group on the technical issues if the government is intent on continuing with inclusion of fugitive coal methane despite the arguments below.

The Coal Association

The Coal Association of New Zealand (Inc.) represents coal producers and the wide range of coal users in New Zealand. Members account for more than 95% of the coal produced in New Zealand each year. In total, 14 coal mining enterprises in New Zealand are producing 5.8 million tonnes of coal annually from 24 operating mines. This has a value of over \$600 million. Most of the output is exported either directly as coal or indirectly by adding value to exports, particularly steel, dairy, meat and forest products.

Inherent inaccuracies with fugitive methane estimates

The Coal Association and others have discussed with officials concerns about the inherent inaccuracies associated with estimating fugitive methane emissions from coal mining. We set out below the reasons for our view that the proposed emission factors would provide a **very poor basis for determining a financial liability**. Consequently, the proposed regulations would be inappropriate to include in a credible Emissions Trading Scheme and will impose arbitrary and unfair costs on coal suppliers and users.

We summarise the main reasons that have been stated before why it is inappropriate to include in the ETS a highly variable emissions source like coal methane with more accurately estimated CO₂ emissions:

1. Methane gas occurs naturally under pressure in the pores and cleats (like layers) of coal seams. When a seam is mined, drilled or fissured (including earthquakes), methane is released (desorbs) into the atmosphere from the exposed faces or fissures. In general, the amount of methane in coal will vary directly with increasing coal rank and depth. Other technical properties of the coal seam such as porosity and permeability will influence the rate of desorption when the seam is exposed.
2. In some of the major coalfields of the world (North America, parts of Europe and Australia) the geological environment over millions of years has resulted in seams of relatively consistent properties. The IPCC has been able to establish ranges of methane emission factors for opencast and underground mining by coal rank. For such coal mining regions, it might be reasonable to argue that an assessment method could be cost effectively established as a basis for an emissions charge.
3. In contrast for New Zealand (and other geologically active countries like Indonesia and Japan), earthquake faults have produced unusually high rank coals at shallow depths. The result is that seams are not continuous, highly fissured and extremely variable in a wide range of properties over short distances. The practical impact for an emissions charge is that there is no cost effective basis on which emissions could be reliably calculated.
4. Many New Zealand opencast mines (and some underground ones) work coal seams at relatively shallow depths, often with seam outcrops at the surface. The methane originally present in the seams has naturally desorbed into the fissures and then through the shallow, permeable overburden. Very little methane is left in such seams (an important safety advantage in the case of shallow underground mines).

5. The latest IPCC guidelines¹ confirmed previous figures on which the default emission factors for methane have been based. Even without taking into account New Zealand's particular variability, IPCC stressed the high uncertainties (ranging from 50% to 200% of the average value) for expert judgement of generalised fugitive methane emissions from coal mining in a country. The IPCC assessed similarly high uncertainty levels for coal basin specific estimates and instead highlighted the advantages of individual mine monitoring (preferably biweekly or monthly measurements to smooth out variations).
6. The emissions formula developed for fugitive methane emissions has been found to be inappropriate for New Zealand coal, particularly for underground mines. Levels of methane emitted from Solid Energy's underground mines have been found to have very little correlation with the tonnes of coal extracted.
7. MED² has justified its high historical estimates of fugitive methane emissions on a 1992 paper, which claimed near world record levels of coal methane content for some NZ underground bituminous coals. Unfortunately, the paper gave the impression that high methane measurements from old, low output mines would be typical of higher output modern mines. The comparison with overseas mine emissions and with IPCC emission factors was not appropriate.
8. There are other practical difficulties relating to post-mining. Methane is released from the coal over a long period once it is exposed. The release rate depends on a variety of factors, a major one being the proportion of fine coal (faster release than large sized pieces or lumps of coal).
9. Methane will be emitted from the coal faces that are exposed but left underground. Extraction percentages vary in New Zealand underground mines from around 15% to 50% so their total methane emissions will vary with mining methods and mine layout.

¹ 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Intergovernmental Panel on Climate Change www.ipcc-nggip.iges.or.jp

² New Zealand Energy Greenhouse Gas Emissions 1990-2007, Ministry of Economic Development (2008).

10. Other complexities are that worked out sections of some underground mines are flooded as they are abandoned to avoid spontaneous combustion of the remaining coal faces, sealing in some of the methane that would otherwise be released. Other mines are sealed off for safety reasons so the methane concentrations would be above the combustible range but it is mostly preserved underground and will not reach the atmosphere.
11. Some underground mines have monitoring equipment to measure methane concentrations for safety reasons but these instruments are not designed for calculating emissions. Obtaining equipment with sufficient accuracy to determine emissions liability would add very high costs, especially for opencast activities.
12. The draft regulations propose that depth (coal seam or overburden) is used to determine the appropriate emission factor for fugitive emissions from coal mining. No mine operators would maintain detailed records of the overburden depth of their mining activities and we are not aware of any practical approach to differentiate between opencast coal mined at the depths prescribed. It is unclear how depth would be defined and to what level of measurement accuracy.
13. The intention of any emissions charge or liability associated is to reduce the activity leading to those emissions. If the output can not be measured with any significant accuracy, then the effectiveness of any mitigation will be not be able to be assessed. Conversely, for coal methane emissions, mine operators could claim an improvement that could not be proven otherwise.

These factors lead to the Coal Association view that the proposed emission factors provide a very poor basis for determining a financial liability to be imposed upon coal suppliers and users. We believe the IPCC factors significantly overestimate the actual emissions but there will be high costs to prove this for individual mines (assuming the

methodology difficulties can be overcome of differentiating between methane emissions from coal mining and emissions occurring naturally).

The Coal Association believes the government should therefore conclude that coal methane emissions should not be included in the ETS.

If the government instead believes all of the inherent difficulties in measuring fugitive methane emissions can be overcome, coal mine operators need to know soon the procedure for establishing unique emission factors to avoid paying for overestimated liabilities from January 2010. The derivation of the proposed emission factors needs to be explained in detail.

Inherent inaccuracies with combustion methane and nitrous oxide estimates

The Coal Association has similar concerns about the ETS inclusion of default emission factors based on combustion methane and nitrous oxide estimates (presumably based on international experience). The high uncertainty range for these emission estimates ($\pm 50\%$ according to MED) are because emissions are heavily dependent on the wide range of boiler (or kilns etc.) equipment and operating conditions.

The majority of coal users will not be able to opt in to the ETS and so will not be able to apply for unique emissions factors, if a meaningful methodology can be established for such inaccurate quantities. They would be required to pay the liability passed through from the coal supplier yet there would be no incentive to improve their operating efficiencies.