

Appendix 17

Notes from Meeting with Department of Health Toxicology Group

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Meeting Record

Purpose: Meeting between New Energy Corporation Consultant Team and DoH Toxicology Group to discuss the approach to handling Air Toxics and Nanoparticles and other health related issues associated with the Boodarie and East Rockingham Waste to Energy Facilities

Date: 1 February 2012

Attendance: Martin Mattison (MM) and Mirella Goetzman (MG)
Department of Health
Pippa Hepburn New Energy Corporation
Noel Davies (ND) Aurora Environmental
Peter Foster (PF) Synergetics

Background

Aurora Environmental provided copies of the EPA's draft Environmental Scoping Document (ESD) with the meeting request to ensure MM and MG were familiar with its content.

Noel Davies provided background on the project and indicated that the primary matters for discussions were:

- The approach to modelling and assessing the impact of air toxics including Dioxins and Furans to address DOH requirements
- The treatment of nanoparticles in the PER
- Clarification of DoH input to the ESD in relation to mosquitoes.

Air Toxics

Pippa Hepburn outlined the main features of the gasifier system and associated exhaust gas cleaning and monitoring systems and how these were designed to represent best practice in terms of emissions control of air toxics.

The key features of the system in this regard are:

- The selected nature of the waste feed which would limit chlorine to less than 1% and limit the load of heavy metals to the gasifier while providing a reasonably uniform feedstock in terms of density, calorific value and moisture content.

- The gasifier design which was a true low temperature gasifier design with air feed controlled to less than 20% of stoichiometric oxygen requirement and which involved long residence times, limited bed agitation and low gas velocities in the gasifier chamber. These design features collectively limit the level of particulate matter entrained in the syngas stream directed to the syngas burner and the concentrations of chlorine compounds in the gas stream which in terms limits the production of dioxins and other air toxics in the exhaust gas stream.
- A high efficiency syngas burner design with low NO_x burners to maximise destruction of organic compounds while minimising NO_x emissions.
- A high efficiency boiler to recover energy and provide a rapid quench to exhaust gases to minimise *de-novo* synthesis of dioxins;
- A three stage gas cleaning system consisting of alkaline scrubber using sodium carbonate or Trona as scrubbing medium, carbon inject to capture volatile metals and high efficiency bag filter to trap particulates including the reacted carbon and scrubbing agent.
- A sophisticated computer controlled and logged Continuous Emissions Monitoring System (CEMS) to monitor key parameters and optimise conditions in the gasifier/syngas/boiler/gas cleaning train

These design features collectively provide emissions performance that is significantly better the EU Waste Incineration Directive Standards.

The DoH staff present in the meeting acknowledged that this approach was very much in line with Best Available Technology but that in addition it was essential that management standards for the facility matched the design standards.

Peter Foster outlined the approach to be adopted for modelling of air emission and indicated that this had been discussed with DEC Air Quality Management Branch staff. Peter indicated that he proposed that the air emissions would be assessed against a range of assessment criteria including:

- The EU Waste Incineration Directive
- The Ambient Air Quality National Environment Protection Measure (AAQ NEPM) 1998 as updated in 2003
- The Air Toxics NEPM (AT NEPM) 2004
- Air Quality Guidelines for Europe (2nd ed) (WHO 2000);



- WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide; and sulfur dioxide – Global Update 2005 (WHO 2005).
- Assessment criteria for a number of toxic substances including dioxins and several metals to sourced from a report by Toxicos document developed in 20101 specifically for the Western Australian DEC. \
- The criteria for the acid gases hydrogen fluoride and hydrogen chloride were derived from a DoH internal (not publicly available) document on the management of acid gases (WA DoH 2007).
- The 1-year criterion for nickel will be based on the limit set by DoH for the Port of Esperance.
- A number of other assessment criteria were adopted from New South Wales regulations (DEC NSW 2005) and deemed to be broadly acceptable in an Australian context.
- Assessment criteria for cobalt and thallium will be sourced respectively from Ontario (Canada) and Texas (U.S) regulatory bodies due to the lack of availability of any more directly applicable standards.

DoH representatives indicated the proposed criteria were generally satisfactory but pointed out that while the WID criteria were of interest, it was necessary to demonstrate compliance with Best Available technology in terms of emission control as well as meeting criteria such as those set down in the WID.

Nanoparticles

DoH staff indicated that while the widespread interest (both scientific and community) in nanoparticles was recognised, the science and regulatory frameworks associated with nanoparticles were immature and poorly developed. In view of this it was recommended that a general discussion of the issue was included in the PER with a commitment by NEW Energy monitoring developments in this area of study.