

Statement of Case by Dr Kit Chow

Re: APP/L3055/V/14/3001886

Development of Bilsthorpe Energy Centre

Called-in application for planning permission by the Secretary of State under Town and Country Planning Act 1990.

February 2015

The document was prepared without the assistance of Counsel by:

Dr Kit Chow MBBCh, FRCR, FFR RCS(Irel)
Consultant Radiologist

Peer Reviewed by Dr Michael J Ward
Former Consultant Chest Physician, King's Mill Hospital

Executive Summary:

Two respectable hospital consultants have reviewed this planning application and both parties found that there has been inadequate health assessment of this project by Public Health England. The applicant's failure to provide adequate health risk information and the planning authority's failure to ask for relevant health information both contributed to the inadequacy of the health assessment.

The outcome is that the two major health risk of this project, which are water emission from cleaning of syngas and micro-particles from slag processing have not been assessed.

The cleaning of syngas produced by incineration of biomass or coal is not new but the cleaning of this type of syngas produced from waste incineration has never been done on a commercial scale. This process therefore would benefit from further detailed study in order to provide the information required for adequate regulation by the Environment Agency. The potential contamination of drinking water aquifer from the dispersion of micro-particles resulting from slag processing may also benefit from further study.

1.0 Introduction:

1.1 Summary:

I have prepared this pre-inquiry statement of case, in the absence of support by counsel; the purpose of my evidence is to assist the Inspector and third parties by providing relevant health information to this inquiry. I do not intend to take sides on this debate and will concentrate only on health impact of this development.

I have attempted to raise health concerns that arose from this development during the planning meeting organised by Nottinghamshire County Council but was not given the appropriate attention. An allowance of 3 minutes of oral presentation was the allowance given for this presentation.

I would be pleased to review any further relevant information prior to the inquiry in order to ensure successful conclusion to the public inquiry to this important application, which will set a precedent for future planning applications.

1.2 Author of Statement:

I am a local consultant Radiologist providing professional radiology services to the local NHS hospitals of Chesterfield Royal Hospital and Sherwood Forest Hospital.

My area of imaging interest is in Head and Neck Imaging and I provide Imaging lead for Head and Neck and also skin cancers. I provide secondary support for lung cancers.

I live near to the proposed development site of Bilsthorpe and became interested in the health issue of this development after being consulted by representatives and residents during the consultation process.

Education:

1971 – 1975 Anglo Chinese Secondary School, Malacca, Malaysia

8 GCE 'O level' passes at grade A

Won school prize for Best Student

1976 – 1977 Kettering Technical College, Northamptonshire, UK

3 GCE 'A level' passes at grade A, with distinction of for Chemistry at special paper level.

My professional qualifications are:

1977 – 1982 University of Wales College of Medicine, Cardiff, UK

Graduation June 1982 – MB BCh

1989 FRCR

1989 FFR RCS(Irel)

1.3 Documents relevant to my evidence include:

- a) Documents from Peel Environmental Website:
<http://www.peel.co.uk/bilsthorpe>.
- b) Nottinghamshire and Nottingham: Waste Core Strategy – Dec 2013
- c) National Planning Policy Framework
- d) Core Documents referenced by this inquiry
- e) The Impact on Health of Emissions to Air from Municipal Waste Incinerators - Health Protection Agency September 2009
- f) National Planning Policy for Waste - Oct 2014 Department for Communities and Local Government
- g) Particulate Emissions and Health, Statement of Evidence to Ringaskiddy Inquiry (Professor C. Vyvyan Howard, June 2009), available from: <http://www.durhamenvironmentwatch.org/Incinerator%20Health/CVHRingaskiddyEvidenceFinal1.pdf>
- h) Role of experts and Public participation in pollution control: the case of Itai-itai disease in Japan. Masanori Kaji – Ethics in Science and Environmental Politics Vol 12:99-111, 2012
- i) Cadmium clean-up in Japan – Japan times report published 2012
- j) Novel Technology for Gaseous Contaminants Control - DOE for US Dept of Energy.
- k) NHS choices web site: <http://www.nhs.uk/conditions/pregnancy-and-baby/pages/foods-to-avoid-pregnant.aspx#fish>
- l) The Health Effects of Waste Incinerators 4th Report of the British Society for Ecological Medicine. Second Edition June 2008

2. Statement of Case

2.1 Summary

My evidence will address the following:

- a) The health issues and risk factors arising from the proposed BEC development have not been adequately assessed and hence are not consistent with the development plan for the area.
- b) The health issues and risks from this development have not been adequately assessed and therefore the proposal does not conform with policies contained in the National Planning Policy for Waste (NPPW), the National Waste Management Plan for England, and the National Planning Policy Framework.
- c) Legal and financial liability of health issues.

2.2 Background:

The BEC development is a complex industrial design, combining established and innovative experimental technology to process 120.000 tonnes of waste per annum and it will recover a proportion of its potential energy, as electricity.

In simple term, it is a combination of “incineration” and “power generation”. This merger unfortunately has resulted in some confusion in planning issues. This combination has been encountered on previous development plans but has involved immediate burning of generated syngas to provide steam. This application is different and the new process raises the new hazards.

One concern relates to the cooling of slag via direct contact with water to cool, resulting in large amount of steam and micro- particles. Another more serious concern is the efficiency and the effectiveness of the cleaning process of ‘waste water’ resulting from the cleaning of contaminated syngas and discharging of this into the environment.

Unknown molecular compounds, which are normally destroyed by incineration in conventional incinerators, are, in the proposed facility, to be washed unchanged into the wastewater. These compounds may escape the cleaning process and detection, resulting in the undetected release of pollutants into the environment.

The quenching of slag in water creates steam and will carry possible toxic particles of various sizes. The site of this development is in the middle of the landmass of England and any ‘escaped’ contaminant will be discharged or washed into the water drainage system where it could be used for human consumption and agriculture. This unplanned pollution will be bio-concentrated and will appear in our future food chain.

This development is unique and all parties have not adequately identified the related health issues and hence its risk to health has not been properly reviewed in this planning process.

In the paragraphs below, I will review each of my serious concerns, which I hope the Inspector will review and assess in relation to the proposal's risk to human health prior to concluding the determination of this application.

2.2.1. Section 7.64 of Waste Core Strategy of Nottinghamshire County Council (adopted Dec 2013) states "The factors that are likely to affect health such as air, water and soil quality can only be assessed properly at the application stage. When determining waste planning applications, expert advice will therefore be sought from the Environment Agency, local environmental health officers, the primary care trusts and the Health Protection Agency, as appropriate. Although the saved Waste Local Plan Policies, our subsequent development management policies and relevant local policies in the District Local Development Frameworks will control issues that are likely to affect nuisance and amenity, the primary controls over pollution are implemented through the separate environmental permitting regime."

In the entire BEC planning documentation, there is insufficient information provided to demonstrate that health assessment has been fulfilled. All responsible parties to this duty of care seems to delegate this responsibility to the Environment Agency that has to regulate this via environmental permits.

This failure of this duty is illustrated by the inadequate response of Public Health England (PHE) in the consultation process. PHE provided a generic reply to this modified combined incinerator and power generation development (CD30). Public Health England does not raise an objection to the planning application on the basis that there is unlikely to be significant air quality impacts subject to the installation employing best available techniques (BAT) and meeting regulatory requirements concerning emission limits and the design parameters.

This is to be secured through the Environmental Permit, which would be assessed by the Environment Agency (EA). The EA recognised its limitation and in its letter of consultation response dated 26th January 2014 state: "The applicant will have to provide detailed environmental risk assessment of potential impacts from emissions to air, land or water for impact on human health and ecology system. This will include all point source emissions and diffuse pollution sources such as dust and odour".

Legally, there has been an inappropriate delegation of responsibility. In clinical terms, proper delegation can only take place if the person delegating the responsibility is qualified to perform the delegation and the party accepting the task is able to perform the delegated task. Public Health England or a respected competent authority will have to initially set the standards of safe level of emissions and monitoring standard required for this novel technology

and Environment Agency has the regulation role of maintaining and policing these set standards.

In absence of adequate research data to determine environmental standards of water and particulate dust pollution by unknown pollutants, this assumed delegation of duty is flawed and can only be concluded as improper delegation of duty by Public Health England.

The applicant failed to evaluate human health risk in their environmental impact study where they concentrated mainly on Air Quality Emissions, transport, Visual impact, flood risk, ecology and Heritage assessment, instead of assessing and identifying health risk from the new cleaning process of syngas.

It should be noted that Paragraph 192 of the National Planning Policy Framework (NPPF) states that: "The right information is crucial to good decision-taking, particularly where formal assessments are required (such as Environmental Impact Assessment...)..." In this instance, the right information has not been made available, and therefore the Environmental Impact Assessment is inadequate.

The Nottinghamshire County Council (NCC) committee report dismissed the health risk of contaminated slag, recommending its use as building aggregates.

I would disagree with this committee report Paragraph 311, which states, "The health assessment shows that the effect of accumulation of pollutants released from the proposed development within the food chain will be negligible". This again demonstrates that the relevant authority failed to recognise the presented health risk but also inappropriately dismissed this health risk without adequate evidence to support their formal conclusion.

2.2.2. Paragraph 192 of the NPPF explains that the "right information is crucial..." and Paragraph 120 explains that the reason for this is to "prevent unacceptable risk from pollution", including "the cumulative effect of pollution on health". In addition, Paragraph 120 states that: "Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner".

I do not have any data that is supplied by the developer on pollution risk from water pollution or dust pollution from this process. In order to make proper risk assessment, the developer should provide performance data of the cleaning process of wastewater resulting from the cleaning of syngas.

I understand that this is a part of the development, which is recognised in Paragraph 316 of the NCC Committee report document as not being commercially operational. Paragraph 316 of the NCC Committee report states: "The main part of the of the process that is not commercially operational is the part that cleans the process gases prior to them entering the gas engines..."

Any assumption that the gas cleaning process would be safe is unsupported with proven data. Based on the information that I have seen, my view is that the gas cleaning process poses a possible serious health and commercial risk. Any undetected water pollutants can have major consequences not only on health but also major financial consequences.

The effect of water pollution is difficult to detect and is best illustrated by a case study in Japan of Cadmium pollution of its river system (Ref: h). The effect of water pollution on health can be difficult to detect. It took 30 years (1905-1935) for the Japanese population to discover that they have been poisoned by Cadmium causing a new disease called Itai-itai disease. It took 67 years (1905-1972) for the affected community to obtain legal recognition and financial compensation (400 known cases). Even today the daily Cadmium food intake in some areas of Japan remains at 2-3 times higher compared to Europe and the US.

The financial consequences are overwhelming. It took 33 years to clean up the Cadmium pollution. Soil on 863 hectares of land in the Jinzu River basin has been replaced under the ¥40.7 billion (£224 million) project, which began in 1979. I note that both the applicants and landowners are limited companies and it would be justified that they provide public liability insurance or a bond of similar size to cover for similar potential environmental disaster, which otherwise would have to be borne by public funds.

2.2.3. Sandstone aquifers are sensitive constraints to waste development in this area, as identified by the Paragraph 7.57 of the Waste Core Strategy for Nottinghamshire 2013 (Ref: b). This was also identified at 4.8.14 of the EIA scoping document. The site is identified by the document to be within a ground source protection zone 3 (Total Catchment). It is therefore surprising that the applicant and the local planning group authority did not look into the health effect of potential water contamination by of the BEC development. There is no mention of this health risk in the committee report and no data to assess this risk.

In addition to water pollution permeation into the ground water, pollution from toxic solid pollutant of PM10, PM2.5 and nano particles should be assessed and monitored. This toxic solid pollutant is a likely consequence of sudden quenching of molten 'glass-like slag' in water. The created steam would distribute these particles and can be classed as diffuse emission by the BEC project. Although it is likely to produce vast amounts of steam emission created by 5.5 MW of thermal waste, it has only relatively low cooling towers of 7 meters. This suggests steam related pollution would be extremely local and concentrated onto the site location.

2.2.4. The BEC developer seems to anticipate that Severn Trent would receive their process effluent via the sewage system (Paragraph 370 NCC Committee Report). If this partnership is created, there should be a legally binding clear line of responsibility for entire process of cleaning and monitoring pollution. Both parties should have sufficient amount of joint public

liability insurance to cover the cost of potential environmental and health disaster.

2.2.5. The applicant has not supplied information with regard to the final destination of its solid emissions, which I assume would be disposed at landfill sites. If these are to be used for construction purposes, the material will require further studies to ensure its pollution effects.

2.2.6. The contamination of water by undetected pollutants could have consequences of mass poisoning of the local population around the Humber Water Basin and around the local aquifer supplying their drinking water. This must not be allowed to happen. The affected population could equate the situation to undertaking a clinical experiment on them without ethical approval and without appropriate consent.

3 Mitigation of Health Risk of BEC developments

3.1. This type of development could be delayed until research data is available to ensure it is safe for human health.

3.2. The power generating part of this development can be changed so that it become unnecessary to wash syngas so that the emissions are mainly to the air.

3.3. Pollution from steam emissions can be mitigated with a much higher cooling tower. Whether an increase in stack height would be acceptable in terms of visual amenity and heritage impacts falls outside the scope of my evidence.

3.4. The successful applicant should be legally obliged to possess public liability insurance or a bond to cover the cost and health consequences of an environmental disaster, which I estimate to be at half a billion pounds.

3.5. In its current state, clearly the approval of this planning application by Nottinghamshire County Council would have been at risk of legal challenge regarding the issues relating to human health. This potential risk will hopefully be addressed in this Inquiry process.

4.0 Conclusion

There has been an inadequate Health Risk Assessment of the development proposed for the Bilsthorpe Energy Centre.

4.1. My justifications to support this statement are: -

The published documents on this development concentrated on health risks from air emissions whilst the main pollution that would arise from this project would be from liquid effluent and steam emissions.

Public Health England does not object to this planning application on the basis "There is unlikely to be significant air quality impact" meaning that PHE has not properly evaluated impacts other than emissions to air and not at all regarding water..

In setting out their position not to object, PHE quote a study which concluded: "Any potential risk of cancer due to residency near to municipal waste incinerators is exceedingly low and probably not measurable by modern techniques". However, Pollutants cause many more diseases than just cancer and this is an incomplete assessment.

The study reviewed data associated with **conventional incinerators only** and its conclusion is not valid here. The proposed facility would produce unspecified complex 'syngas', which would be 'cleaned' by an unproven industrial process. The process needs to be examined in more detail. The process would produce contaminated effluent, which have risk of water pollution. It can pollute the water environment of the aquifer supplying local drinking water and the surface water used for agriculture.

It should be noted that it is the role of the Planning Authority to determine the suitability or otherwise of the location for the proposed use, and in the absence of evidence that the facility would not pose a credible and serious risk of harm to health. The inappropriateness of this location (near human receptors, in the middle of land mass being in middle England and on top of an aquifer) is questionable. It is further noted that the environmental permitting process does not cover such concerns.

The effects on health, which are difficult to detect and measure, **do not exclude credible serious health risks**. A case study of water pollution by Cadmium in Japan took 30 years to detect, 67 years to prove and obtain legal compensation. Even today, Japanese people continue to be poisoned, with their daily Cadmium intake in food being 2-3 times higher than Europe and the US (Ref: h).

This incoherent PHE response raises the question whether they have been properly consulted. The inadequate Environmental Study suggests that they have not been guided to the possible health risk generated by this development.

The health assessment of this project concentrated mainly on air emission, resulting in Inadequate Assessment of Public Health Risk.

4.2. Summary of Health Hazards:

Emission 1: Solid

Molten solids will be quenched in water to cool; creating large volumes of contaminated steam (*5.5 MW thermal waste is equivalent to approximately 2000 electric kettles*). The steam will disperse polluted dust particles including PM10, PM2.5 and Nano particles of heavy metals fragments and compound of heavy metal fragments.

It has been estimated that the increased mortality works out as about a 0.5-1% increase in mortality for each 10µg per cubic meter rise in PM10s for acute exposures and a 3.5% rise for chronic exposures. For PM2.5s the increase in mortality is much greater, especially for cardiopulmonary mortality. (Ref: I)

The proposed use of 26000 TPA of this slag as building aggregates is a source of cumulative potential pollution hazard.

Emission 2: Gas

It is claimed that air emission will be less than conventional incineration, but even so this remains a proven health hazard.

Emissions 3: Liquid Effluent

Water contamination would be much worse than conventional incineration.

Syngas from pure wood or rice husks alone will produce 160 contaminants (Ref: j). The proposed BEC facility, with its complex chemical condition, will generate numerous unknown complex molecular compounds.

Washing the dirty syngas will add additional unknown contaminants, some of which are normally neutralised by conventional incineration, into the effluent.

Bilthorpe Waste Limited only plan to remove a limited number of easily removable known contaminants listed in the Scoping documents, i.e. "Remove particulates, HCl (and other acid gas), ammonia, sulphur and mercury".

Paragraph **316** of NCC's Planning Committee Report made the admission that the washing of BEC's process syngas is not commercially available. This process remains experimental and which explains its limited cleaning capability. There is **no** mention of removal of other heavy metals (such as cadmium), dioxin, furans, cyanides and the numerous other unknown contaminants generated by process.

The waters around UK are already polluted. The current NHS advice to pregnant women is to restrict their eating of oily fish due to pollutants of Mercury, PCB and Dioxins.

It is my wish to ensure that health issues associated with this development are properly examined. This new innovative industrial process has the potential for the unintentional effects of causing pollution to our environment and causing possible mass poisoning by water emission.

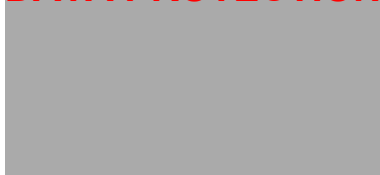
5.0 Declaration

I declare an interest in this topic due to my proximity of my residence to the BEC project. However this may only be a short-term factor since I have put my house up for sale.

I declare that I have no other conflict of interest in this project, financial or otherwise to any parties of this project.

For the avoidance of doubt, the opinions expressed in this Statement of Case and in the evidence to follow are my own and are not made on behalf of my employer.

DATA PROTECTION



Dr Hon Kit Chow MB BCh, FRCR, FFR RCS(Irel)
Consultant Radiologist
Sternhill Paddock
Back Lane
Eakring
Newark
Nottinghamshire NG22 0DJ