



**Report of the Health Impact
Assessment (HIA) of the
Proposed expansion to the
Incinerator at Eastcroft,
Nottingham**

January 2006

by Nottingham Health Action Team

Foreword

Waste in a National Context

This report focuses on the potential health impacts of the proposed expansion to the incinerator at Eastcroft, Nottingham and as such follows a clearly defined methodology and examines the best available evidence. The conclusions and recommendations follow the qualitative and quantitative data that has been examined.

As Chair of Nottingham Health Action Team I would also like us to reflect on the national context of waste management. Incineration has provided a reasonable approach to waste management in the final quarter of the last century and within that period safeguards have been introduced that have led to significant improvement in the process of incineration that reduce likely impacts on health.

The challenge for society in this century is to look at incineration within the context of new technologies and a question for planners when considering this report; - is incineration the best available technology today?

Examples of alternatives are plants such as that being developed by Woking Borough Council that utilise cutting-edge technologies of in-vessel composting, anaerobic digestion and pyrolysis. The thermal treatment of the waste would produce combined heat and power, which could be distributed directly to customers in the Borough and could be sufficient to provide heat and power to over 4,000 local homes.

Woking's proposed waste treatment plant would deal with residual household waste – waste that has not been sorted by residents for recycling, and green waste from household collections and civic amenity sites. The plant could process 80,000 tonnes of household waste per annum. Woking's project proposal will soon be published on their website - www.woking.gov.uk and presented as an alternative to mass burn incineration.

In the meantime I commend this health impact assessment report to you.

Alan Simpson, MP
Chair, Nottingham Health Action Team

Executive Summary

Background

The Director of Public Health (City) tasked Nottingham Health Action Team (NHAT) with carrying out this Health Impact Assessment. NHAT used its network to identify key representatives from stakeholder organisations to form a steering group. The steering group was established with the specific aim of carrying out a Health Impact Assessment of the Incinerator expansion in order to inform the City PCT of the likely health impacts of the expansion. This report has therefore been produced by the HIA steering group to advise Nottingham City PCT on the likely Health impacts of the proposed expansion to the incinerator at Eastcroft.

The rationale for undertaking an HIA of the extension of the incinerator was that it could; -

- Contribute to the PCTs submission to the planning process – a comparison of what exists against what is proposed
- Scrutinise the information presented in the Environmental Impact Statement by the developer
- Contribute to understanding by stakeholders

The steering group decided to focus the HIA on just the expansion and not to duplicate the work the Environmental Assessment produced.

The Proposal

Waste Recycling Group Ltd applied to Nottingham City Council for planning permission on 27 July 2005 to provide a Third Line extension to the Incinerator at the Eastcroft facility, Cattle Market Rd, Nottingham. The incinerator currently processes 160,000 tonnes per year of non-hazardous, municipal solid waste from local homes and businesses, which generates heat and power for the Nottingham City district-heating scheme. It is estimated that the extension will provide an additional 100,000 tonnes per annum waste management capacity.

Learning from other HIAs

It is good practice to learn from other HIAs and before planning the stakeholder event, lessons from another similar HIA at Rugby were considered. This HIA aimed to inform the planning process about a change of fuel at a plant to tyre burning. A key learning point was the importance of planning the event to maximise input from all participants. We therefore focused discussion in small groups instead of having a question and answer session in order to achieve this.

Another learning point from the Health Impact Assessment Research Unit was that goodwill gestures to the communities affected by proposed interventions can help to mitigate against negative impacts and this was incorporated into our recommendations.

The Process

The timescale for contributing to the planning process was envisaged to be short; - a response was requested by September 2005 initially - and therefore a Rapid Health Impact Assessment was considered to be the most appropriate assessment method.

Evidence about the likely Health Impact of the extended incinerator was collated from a range of sources including Nottingham City Council, the Health Protection Agency, Nottingham City PCT, the community in Sneinton, Waste Recycling Group (WRG) and the Environment Agency.

This HIA process involved key stakeholders in order to develop a comprehensive account of the Health Impact of the incinerator expansion. Nottingham Health Action Team identified people through their networks with an interest and expertise in this area who could contribute to the HIA stakeholder event. A complete list is attached at Appendix 1 with the attendance list. They included representatives from the following organisations and communities; -

- Local National Health Service representatives including GPs NHS Direct, Primary Care Trusts, Patient Partnership team and Health Protection Agency East Midlands (a non-governmental public body)
- Local Authorities whose area includes Broxtowe & Hucknall, Nottingham City, Gedling and Rushcliffe including Nottinghamshire County Council
- Community / Voluntary Sector e.g. Health in Your Environment Voluntary Sector Forum, Tenants groups/forums, Self Help Nottingham, Age Concern Nottinghamshire and allotment growers in Sneinton
- Nottingham Against Incineration and Landfill – pressure group
- Local Partnerships e.g. Food Initiatives Group and Nottingham Health Action Team
- Others e.g. Nottingham Trent University, Waste Recycling Group, Government Office East Midlands – policy field and the local Media – Nottingham Evening Post.

A Rapid Appraisal Stakeholder Event took place on Wednesday 12 October 2005 - 18.00 to 21.30 at the New Mechanics, North Sherwood Street, Nottingham.

Nottingham City PCT's Director of Public Health chaired the event, with speakers from the Health Protection Agency, Nottingham City Council, Waste Recycling Group and a resident on behalf of the community in Sneinton.

The workshops were designed to identify, group and prioritise the key issues for stakeholders and propose ways in which these could be addressed. The objectives of the workshops were to; -

- identify what stakeholders perceive may be the key consequences of the proposed expansion of the incinerator.
- suggest what effect these consequences may have on the local population
- propose what actions can be taken to address these

There were three workshop themes – Social, Economic and Environmental

The Baseline Profile

The profile for the local community in the vicinity of the incinerator was investigated and information relevant to the Health Impact Assessment is included in Section 6

Nottingham's life expectancy increased only very slightly between 1996-1998 and 2000-2002. Nottingham is the 7th most deprived local authority area (IMD 2004); having worsened from 12th in the 2001 rankings. Deprivation and poor health at every age are linked, and life expectancy is worst in more deprived wards. At 73.3 years for males and 78.5 for females, life expectancy is low in the city, compared with other areas of similar deprivation but this is unexceptional given the city's high level of deprivation (there is a strong correlation between deprivation and life expectancy). Life expectancy in the Dales ward, which is the location of the incinerator, is 77.7 for females and 70.6 for males. The surrounding City wards of Bridge, St Ann's and Mapperley all have a lower than regional average of life expectancy. However, most of Nottingham City wards have a lower than average life expectancy because of the high levels of deprivation. Further details of the Dales ward are given in the main body of the report but should be viewed in context of the City as a whole.

Cancer rates in the City are high compared with East Midlands averages, but consistent with the level of deprivation in the City. Cancer rates are falling, and over the last few years, these falls have been greater in the more deprived areas. However, we know that lung cancer rates, especially in women in Nottingham continue to rise – reflecting smoking rates in women locally over the last 20 years and will rise further in this group before they start to fall. Dales ward has high levels of cancer hospital admissions compared with regional averages but has an average cancer rate for Nottingham City of 5.72 to 6.35 (directly standardised rate per 1000 population – all ages, 2002-4 pooled).

Results

On examining the best available information, the Health Protection Agency's advice is that incinerators emit pollutants into the environment but provided they comply with modern regulatory

requirements, such as the Waste Incineration Directive, they should contribute little to the concentrations of monitored pollutants in ambient air. Epidemiological studies, and risk estimates based on estimated exposures, indicate that the emissions from such incinerators have little effect on health. The Agency, not least through its role in advising Primary Care Trusts and Local Health Boards as statutory consultees for Pollution Prevention and Control (PPC), will continue to work with regulators to ensure that incinerators do not contribute significantly to ill health.

HIAs must also take account of the health effects arising from public anxiety about health impacts of waste management facilities (be they actual or perceived). ([REDACTED] 2004). In this respect the qualitative evidence gathered from stakeholder event is very relevant here. The groups raised a number of issues, consequences and actions to do with health, environment and waste and prioritised them. Key issues and actions are documented in the tables at **Appendix 8** and illustrate some anxiety in the community that this expansion could have a negative impact on social, environmental and economic factors, which, in turn, could have a detrimental effect on health. Key themes included Air quality, Climate Change, Development, District heating, Emotional Well being, Energy, Food, Health, Health Inequalities, House Prices, Inequalities, Inclusion, Jobs, Pollution, Recycling and Traffic. Some of these points were repeated but the scoring reflects the level of concern for the theme. The tables should be studied as the information here is intended to provide **only a snapshot** of the issues raised. The most frequently raised themes were Air Quality, Health Inequalities, Pollution, Traffic, and Recycling and these were also given the highest priority. These reflected the perceptions of the key health concerns by the participants with regard to the incinerator.

During the HIA process questions emerged about how robust the business case for the expansion is, bearing in mind the following points;

- The consideration by Nottinghamshire County Council to use alternative incinerator facilities
- The European waste reduction targets applied by EMRA to the region
- A potential increase in fuel over the next few years particularly for transporting waste to the incinerator from other areas.

Conclusions

The scientific evidence based on the best available information is that incinerators emit pollutants into the environment but provided they comply with modern regulatory requirements, such as the Waste Incineration Directive, they should contribute little to the concentrations of monitored pollutants in ambient air and therefore there would be no significant negative impact on the health of the population living in the vicinity of the proposed incinerator expansion.

However, Health Impact Assessments also take account of qualitative evidence gathered from stakeholders. In this respect, the information gathered at the event held on 12 October together with that forwarded by community representatives subsequent to the event, suggests that this expansion would result in a negative impact on social environmental and economic factors as people respond to perceptions which could in turn, negatively affect health e.g. through increasing existing health inequalities as discussed in the Results section.

Whilst acknowledging the results of the scientific evidence, this report therefore makes a number of recommendations that seek to address the concerns of the communities adjacent to the incinerator.

Recommendations

The following recommendations have emerged from the HIA stakeholder event and from the work of the steering group. If the decision is to go ahead with the expansion, we would recommend including mitigating actions against potential health risks e.g. by considering implementing some of the actions put forward at the event in the tables in Appendix 8.

- 1 An action plan based on the priority issues agreed by stakeholders should be developed and agreed by the City Council.
- 2 An incinerator expansion steering group should be established with responsibility for overseeing the implementation of an action plan and to liaise with the Environment Agency over reporting arrangements for surveillance of emissions and noise. This should take account of existing reporting arrangements under the PPC permit, regularly reviewed by the Eastcroft Liaison Committee. Members to be drawn from the same organisations as on the HIA steering group with additional members from Waste Recycling Group (WRG), the incinerator expansion company, and the local community.
- 3 The beneficiaries of the expansion should be asked to invest a proportion of the income generated in the community most affected; - i.e. Sneinton, Netherfield and Lady Bay, e.g. subsidised heating or an acceptable alternative. Evidence from other HIAs has demonstrated that goodwill gestures to the community who do not want proposals to go ahead help to mitigate against the negative impacts.
- 4 Monitoring of potential health impacts is potentially highly challenging because of the relatively small effect compared with all other determinants of health that we anticipate the incinerator will make. We recommend further work with the East Midlands Public Health Observatory to explore the potential for robust ways of monitoring possible health impacts in the future.
- 5 More investigation of the role of confounding factors in determining psychological morbidity of individuals living close to waste facilities and evaluation of interventions directed to preventing psychological morbidity.....(██████████- 2004).
- 6 The business case for the expansion should be reviewed by WRG and Nottingham City Council; - On the basis that the business case is robust, the advantages of the expansion are likely to outweigh the minor negative health impacts. During the HIA process however, questions emerged about how robust the business case for the expansion is and these should be examined.

Report of the Health Impact Assessment (HIA) of the Proposed expansion to the Incinerator at Eastcroft, Nottingham

December 2005

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[redacted] Deputy Director Public Health – Newark & Sherwood PCT

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Acknowledgements

The Director of Public Health (City) tasked Nottingham Health Action Team (NHAT) with carrying out this Health Impact Assessment. NHAT used its network to identify key representatives from stakeholder organisations to form a steering group. The steering group was established with the specific aim of carrying out a Health Impact Assessment of the Incinerator expansion in order to inform the City PCT of the likely health impacts of the expansion. This report has therefore been produced by the HIA steering group to advise Nottingham City PCT on the likely Health impacts of the proposed expansion to the incinerator at Eastcroft. It will also be sent to participants at the stakeholder event to inform them of the outcome of their contribution and to NHAT members.

NHAT works across different sectors in Greater Nottingham involving representatives of a variety of organisations to promote good health and tackle health inequalities through identifying and addressing the environmental causes of ill health. NHAT also links this agenda with wider economic issues. Topic areas include - Food Initiatives, Affordable Warmth, Transport & Health Initiatives and Waste.

Thanks to the many people who have contributed to this Health Impact Assessment. These include;

- Nottingham Health Action Team for their networking and support for the event
- the steering group who have worked hard to communicate complex information across different perspectives and organisational cultures in a short space of time (listed in the Introduction)
- the speakers, facilitators and participants at the Stakeholder event (listed in Appendix 2)
- the community representatives who have contributed their information freely
- the staff at Nottingham City PCT who supported the planning and implementation of the event
- [redacted] Birmingham University for telephone support for the HIA process
- the Mechanics Institute for the use of their venue

2. Introduction

This report informs Nottingham City P.C.T.'s response to the Planning Consultation about the proposed expansion to the Incinerator at Eastcroft, Nottingham. It was produced by a steering group on behalf of Nottingham Health Action Team who were tasked with carrying out a Health Impact Assessment (HIA) of the proposed expansion by the Director of Public Health for Nottingham City PCT.

¹ The report includes the following information; -

- 1 Executive Summary
- 2 An outline of the Proposal being assessed
- 3 An introduction to the Health Impact Assessment (HIA) of this proposal – including the HIA screening and scoping
- 4 The Appraisal - Identifying and considering the evidence of the health impact including;
 - 4.1 Baseline profile of the community or population affected by the proposal
 - 4.2 A summary of local conditions or circumstances relevant to the proposal (from sources of local routine and non-routine data)
 - 4.3 Evidence from the published literature
 - 4.4 Information from HIAs that have been conducted on similar proposals and/or the same community populations
 - 4.5 Results of the appraisal, including impacts on health and interventions to address those impacts.
- 5 Recommendations
- 6 Further engagement with decision makers
- 7 Ongoing monitoring and evaluation

• Outline of the Proposal being Assessed

The current incinerator at Eastcroft Nottingham was built in 1973. It was substantially upgraded in 1995/96 when a new flue gas treatment plant was installed and the ash handling facilities were improved. It has been further upgraded in 2005 in order to meet the requirements of the Waste Incineration Directive, with the installation of abatement equipment for nitrogen oxide emissions and improvements to the combustion control systems.

Waste Recycling Group Ltd applied to Nottingham City Council for planning permission on 27 July 2005 to provide a Third Line extension to the Incinerator at the Eastcroft facility, Cattle Market Rd, Nottingham. The incinerator currently processes 160,000 tonnes per year of non-hazardous, municipal solid waste from local homes and businesses, which generates heat and power for the Nottingham City district-heating scheme. It is estimated that the extension will provide an additional 100,000 tonnes per annum waste management capacity.

The planning processes are outlined in section 5.3 and a more detailed explanation can be found at Appendix 3.

What is a Health Impact Assessment?

The purpose is to; -

- Identify the potential health consequences of a proposal on a given population
- Maximise the positive health benefits and minimise potential adverse effects on health and health inequalities.

Steps in HIA

¹ The report structure was informed by Erica Ison's work in Kemm J & Parry J *Health Impact Assessment* 2004 – Oxford University Press page 128

1. Deciding whether to undertake an HIA (screening)
2. Deciding how to undertake the HIA (scoping)
3. Identifying and considering the evidence of the health impact (appraisal)
4. Formulating and prioritising recommendations
5. Further engagement with decision makers
6. Ongoing monitoring and evaluation

3. Introduction to the Health Impact Assessment (HIA) of the proposed extension to the Incinerator

- The Steering Group

The Director of Public Health (City) tasked Nottingham Health Action Team (NHAT) with carrying out this Health Impact Assessment. NHAT used its network to identify key representatives from stakeholder organisations to form a steering group. The steering group was established with the specific aim of carrying out a Health Impact Assessment of the Incinerator expansion in order to inform the City PCT of the likely health impacts of the expansion.

The steering group included the following representatives; -

Co-ordination - [redacted] - Public Health Development Manager - Nottingham Health Action Team / Nottingham City PCT

[redacted] - Pollution Control Team Leader – Nottingham City Council
[redacted] - Environment Agency
[redacted] - Environment Agency
[redacted] - Deputy Director Public Health – Newark & Sherwood PCT
[redacted] - Assistant Director Public Health – Nottingham City PCT
[redacted] - Senior Environmental Scientist – Health Protection Agency
[redacted] - Head of Regional Chemicals and Environment Unit – Health Protection Agency
[redacted] - Consultant in Communicable Disease Control – Health Protection Agency
[redacted] - Director of Public Health – Nottingham City PCT
[redacted] - representative – Health in Your Environment Voluntary Sector Forum
[redacted] - Senior Public Health Manager – East Midlands Public Health Team
[redacted] - Senior Public Health Manager – East Midlands Public Health Team

- HIA Step 1 Screening - Deciding whether to undertake an HIA

The steering group considered whether or not an HIA should be carried out on this proposal and decided that it was appropriate to do so. The rationale for undertaking an HIA of the extension of the incinerator was that it could; -

- Contribute to the PCTs submission to the planning process – a comparison of what exists against what is proposed
- Scrutinise the information presented in the Environmental Impact Statement by the developer
- Contribute to understanding by stakeholders

The steering group decided to focus the HIA on just the expansion and not to duplicate the work the Environmental Assessment produced.

The statutory planning processes outlined below informed this decision.



- The Statutory Planning Processes

The incinerator extension proposal requires both planning permission from the City Council, and a permit under the Pollution Prevention and Control (PPC) regulations from the Environment Agency. The latter will also ensure compliance with the EU Waste Incineration Directive.

To inform both processes a statutory Environmental Impact Assessment (EIA) is required and this needs to consider the health impacts in detail. (This is within the planning application)

- It is the developers responsibility to prepare the Environmental Impact Statement (EIS)
- It will ultimately be the Planning Authority who must ensure that the EIA has covered all aspects including health adequately. Note – the Environment Agency has no regulatory

authority concerning the planning EIA – they are a statutory consultee to the planning process only.

A more detailed explanation of the planning context can be found at Appendix 3

➤ **Planning issues & Timetable Summary**

- Planning application submitted 27 July 2005.
- Complex applications have a minimum determination period of 16 weeks, which can be extended by agreement with the applicant. This is likely in this respect due to the complexity of the issues e.g. in respect of the County Waste contract which affects the assumptions over waste sources. The determination is unlikely to occur until at least January 2006.
- An Environmental Impact Assessment EIA is required and was submitted by the applicant as part of the planning application. Specialist consultants engaged by Nottingham City Council will also appraise it.
- Consultees include; Borough & County Councils, Nottingham City PCT and the Environment Agency.
- A Public Inquiry is possible, which will look at the results of the EIA.
- To meet minimum legal requirements the EIA submission takes a very scientific approach to understanding baseline pollution and health levels, predicting any significant impacts resulting from the expansion of the incinerator, and proposing mitigation.
- Planning processes remit includes transportation of waste and waste by products as part of 3rd line.
- The Health Impact Assessment was focused only on planning permission for the 3rd line
- During the course of the HIA process it emerged that Nottinghamshire County Council are anticipating setting up their own incinerator rather than using the expansion
- The application of the Guidance on Directive 2000/76/EC on the incineration of waste edition 2 – DEFRA (Aug 2004) which asks for reports on why Best Available Techniques are not being used, is a matter for the PPC Regulations and not the planning regulations. If this applies to the extension then the reasons for not embracing the Best Technology e.g. gasification and pyrolysis will have been reviewed by the Agency and the choice of incineration technology and the case for the moving grate furnace accepted.

➤ **Integrated Pollution Prevention and Control**

The Pollution Prevention and Control (PPC) permit application was submitted to the Environment Agency at the end of March 2005. It concerned the existing two incineration lines and the proposed third line (note the HIA focused only on the 3rd line for planning considerations). A permit was issued to WRG for all three incineration lines on 22 December 2005. It was not necessary for wait for a decision to be made on the planning application before issuing the PPC permit, due to the different remits of the planning and pollution control regimes.

The PPC Regulations concern the design and operation of the plant to ensure that pollution is either prevented or, where that is not possible, minimised to ensure no significant pollution is caused. There are some areas of overlap between the planning process and the pollution control regime. In particular, the impact of emissions to atmosphere from the extended incinerator is subject to detailed assessment during the PPC determination process. However, the scope of the Agency's remit is the "installation" where the incineration activity is carried out, which comprises the Eastcroft site but does not include traffic travelling to and from the site.

The PPC application was subject to public consultation and the comments made by the statutory consultees, which included the Primary Care Trust, Food Standards Agency and Nottingham City Council, were taken into account in the determination.

The draft response by Nottingham City PCT to the IPPC was circulated at the HIA meeting in July (Packham C 24/5/05)

- **The Environmental Impact Statement by the developer**

The Environmental Statement, produced under the Town & Country Planning (Environmental Impact Assessment) (England & Wales) Regulations 1999, consists of two volumes of documentation, - Volume 1 – the Main Statement and Volume 2, - the appendices. The Statement includes a Health Impact Assessment section.

The statement concludes that: -

- 1 The proposals stem from the need to continue to meet the City's district heating and local waste management demands over the next 30 years, whilst promoting sustainable methods of waste management.
- 2 Overall, beneficial effects are predicted to result from the operation of the extended plant. By enabling energy recovery from waste that would otherwise be landfilled, the proposed extension would allow the City, County and Region to process more waste further up the waste hierarchy, through the use of an existing facility. *
- 3 The extended Energy from Waste plant would play an increasingly important role in managing residual Municipal Solid Waste and Commercial and Industrial waste which would have beneficial effects in terms of the challenges facing landfill capacity in Nottinghamshire and in achieving the Government's objectives for reducing the role of landfill in waste management.
- 4 The proposed improvements to the appearance of the plant would reduce the significance of the predicted adverse effects on visual amenity and result in beneficial effects in terms of landscape and townscape character and cultural heritage setting.
- 5 The improved appearance of the plant would also create a visually coherent unit that would present a new and appropriate image for the developing city centre, and would maximise the potential of the plant to support and promote the plans for regeneration of the area.
- 6 Given the strict controls placed on the design and operation of the plant, no significant effects on local air quality, noise and health of existing and future communities are predicted. Additionally, no significant effects on the condition of local wildlife designations or buildings of cultural heritage importance are predicted.

(Waste Recycling Group (WRG) July 2005 – Volume 1 - conclusions)

* during the course of the HIA process, the HIA steering group were advised that Nottinghamshire County Council were considering plans for the use of an alternative incinerator.

➤

- **HIA Step 2 – Scoping - How the HIA of the Incinerator Expansion was undertaken**

There are different types of HIAs. In this case a rapid appraisal in the classic HIA process was considered the Best Available Technique due to; -

- Limited resources (financial and human in particular)
- Limited time in which to generate outputs to influence decision makers

(Erica Ison in Parry & Kemm 2004 Chapter 11 Page 123)

Function: to identify potential impacts on health of the incinerator, and ways of addressing those impacts.

Accountability: Through a steering group established for this specific HIA with an agreed aim

Protocol: Guided by a scoping document for this HIA agreed by steering group, containing its parameters or 'boundaries'

People involved: Stakeholders for this specific HIA (see list). Guidance was sought from people with expertise in HIAs from Birmingham University; however, the steering group due to pressures did not appoint 'assessors' due to lack of time and resources.

Distribution of the results: Results were reported to the steering group in full, before wider dissemination to all stakeholders. The Steering group took responsibility for producing the report

Community consultation: members of the community are stakeholders and were invited to take part.

The scoping was overseen by the steering group and other meetings with key stakeholders such as the Director of Public Health (City), the Health Protection Agency and Waste Recycling Group (WRG), the company applying for planning permission to build the Third Line expansion with feed back to the steering group.

The purpose was; -

- to inform PCTs input to the planning process & follow up to the PCTs response to the Integrated Pollution Prevention & Control process (see section on planning processes)
- assessment of the Environmental Impact Statement by the developer.
- determination of the presentations and key areas for consideration at the event.

The areas considered were social, economic and environmental issues

Other similar HIAs were identified and contact made gaining advice about good practice and the challenges involved

Air dispersal modelling was utilised

Members of the steering group reviewed the weight of documented evidence to inform the overall HIA document and cover the purpose & scope of HIA.

The stakeholder event itself was the key source of the HIA and its results used to produce the final report

➤ **Table to show Key Scoping Issues, Implications and Decisions**

| Key Scoping Issues | Implications | Decisions |
|--|---|---|
| Would the HIA influence the planning process? | Short timescale to influence planning. Therefore implications for type of HIA | Rapid appraisal necessary to allow time for PCTs to inform the planning process |
| Clarity of remit | Huge area of work with possibility for lack of focus | Focus on extension only |
| Where the plume falls | For geographical area to be considered | Greater Nottingham but with a specific focus on Sneinton & St Anns |
| Scoping of local evidence | 1 extra death in 100 years | |
| Dispersal modelling | Does it apply locally to all receptors? | Obtain information on elevated receptors (e.g. residents of tower blocks etc) |
| HIA already incorporated in Environmental statement | Should we go ahead? | Yes due to gaps in evidence and local consultation |
| Engaging key stakeholders, including local communities | For access to key issues and information in an understandable format and outcome of assessment | Brainstormed ideas, consulted Patient Partnership team at City PCT & City Co Area 6 committee |
| Assessing the evidence/advice from HPA, Environment Agency, national and local experts – environment | Takes time to gather and assess best available evidence. Implications for outcome of HIA and recommendations are strong | To utilise expertise of organisations represented on steering group to draw together best available evidence for stakeholder event and report |

➤ **What was carried out**

A Rapid Appraisal Stakeholder Event took place on Wednesday 12 October 2005 - 18.00 to 21.30 at the New Mechanics, North Sherwood Street, Nottingham

➤ **Stakeholder involvement**



This HIA process involved key stakeholders in order to develop a comprehensive account of the Health Impact of the incinerator. Nottingham Health Action Team identified people through their networks with an interest and expertise in this area who could contribute to the HIA stakeholder event. A complete list is attached at Appendix 1 with the attendance list. They included representatives from the following organisations and communities; -

- Local National Health Service representatives including GPs NHS Direct, Primary Care Trusts, Patient Partnership team and Health Protection Agency East Midlands
- Local Authorities whose area includes Broxtowe & Hucknall, Nottingham City, Gedling and Rushcliffe including Nottinghamshire County Council
- Community / Voluntary Sector e.g. Health in Your Environment Voluntary Sector Forum, Tenants groups/forums, Self Help Nottingham, Age Concern Nottinghamshire and allotment growers in Sneinton
- Nottingham Against Incineration and Landfill – pressure group
- Local Partnerships e.g. Food Initiatives Group and Nottingham Health Action Team
- Others e.g. Nottingham Trent University, Waste Recycling Group, Government Office East Midlands – policy field and the local Media – Nottingham Evening Post.

The steering group acknowledged that the number of community representatives at the event were small in proportion to professional stakeholders. Stakeholders should be involved in HIAs in order that concerns can be identified, but the difficulties in meaningful involvement are widely acknowledged (Parry & Kemm 2004 p413). As Erica Ison points out, stakeholders may choose not to participate for a variety of reasons e.g. they do not understand what HIA is and feel unable, or lack the confidence, to contribute, the time or venues is inconvenient or they may be sceptical about the power of the technique, or those leading the HIA to make a difference. (Ison E 2004)

However we cannot underestimate the value of involving local people in HIAs. In terms of seeking solutions to problems that may arise from implementing policies, programmes, and projects lay knowledge brings a historical perspective that is critical to the appropriateness and effectiveness of contemporary decisions. The importance of lay knowledge in a multi-agency and multidisciplinary approach to healthy decision-making creates the conditions for thinking in new ways. Lay voices, in dialogue with other professionals and academic experts, provide the foundations for a 'civic intelligence', which is grounded in a better understanding of the human condition in different contexts. (Elliott, Williams and Rolfe - 2004)

For this reason a section of evidence including points made by community reps shortly after the stakeholder event were included in this report (see Community contributions Appendix 7).

4. HIA Step 3 -Appraisal – Identifying and considering the evidence of the Health Impact

This section includes; -

- 6.1 the baseline profile of the community or population affected by the proposal
- 6.2 a summary of local conditions and circumstances relevant to the proposal
- 6.3 evidence from the published literature
- 6.4 information from other relevant HIAs
- 6.5 results of the appraisal.

- **Baseline profile of the community or population affected by the proposal - Nottingham City Health Inequalities**

Life Expectancy

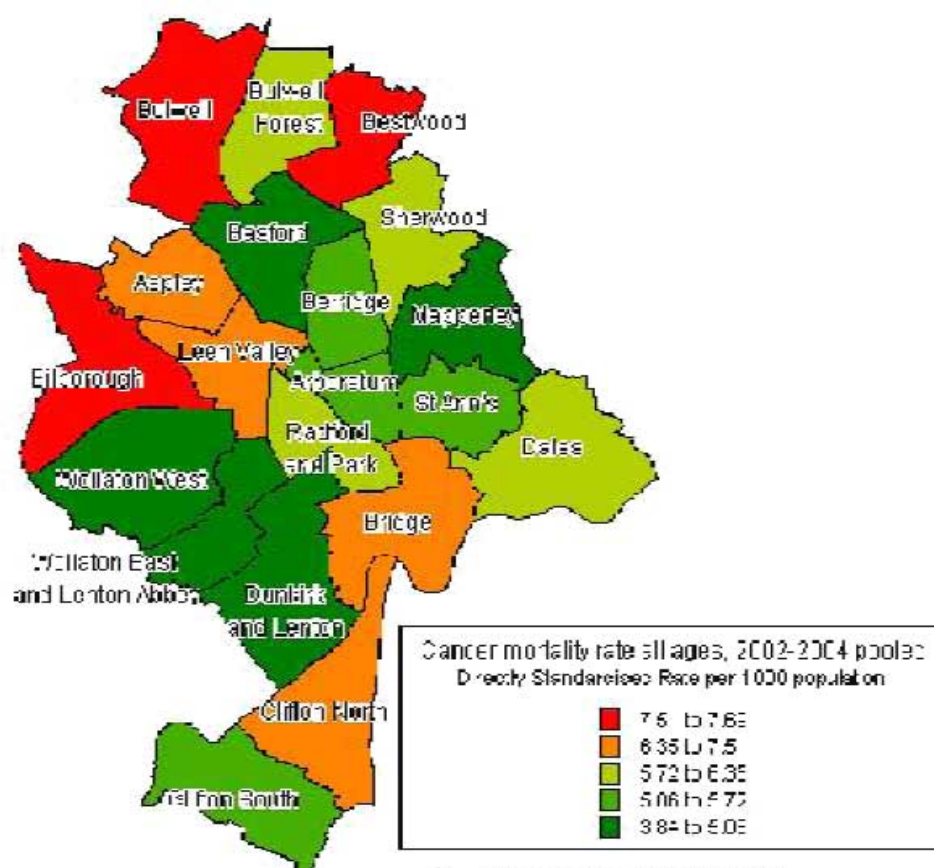
Nottingham's life expectancy increased only very slightly between 1996-1998 and 2000-2002. Nottingham is the 7th most deprived local authority area (IMD 2004); having worsened from 12th in the 2001 rankings. Deprivation and poor health at every age are linked, and life expectancy is worst in more deprived wards. At 73.3 years for males and 78.5 for females, life expectancy is low in the city, compared with other similar areas but this is unexceptional given the city's high level of deprivation (there is a strong correlation between deprivation and life expectancy) and communities. Life expectancy in the Dales ward, which is the location of the incinerator, is 77.7 for females and 70.6 for males. The surrounding City wards of Bridge, St Ann's and Mapperley all have a lower than regional average of life expectancy. However, most of Nottingham City wards have a lower than average life expectancy because of the high levels of deprivation. Further details of the Dales ward are given below but should be viewed in context of the City as a whole.



There has been an improvement in the major causes of adult deaths in every section of the local population in Nottingham City with some substantial achievements (such as a 5% annual reduction in the incidence of coronary heart disease). However, progress on reducing health inequalities outcomes is patchy.

Latest data suggests that whilst cancer and all age accidental death rate differences between the most and least deprived fifth of areas are reducing, vascular disease death rate differences are unchanged. 53% of the Nottingham City population lives within wards ranked within the 10% most deprived nationally (IMD 2000).

Cancer rates in the City are high compared with East Midlands averages, but consistent with the level of deprivation in the City. Cancer rates are falling, and over the last few years, these falls have been greater in the more deprived areas. However, we know that lung cancer rates, especially in women in Nottingham continue to rise – reflecting smoking rates in women locally over the last 20 years and will rise further in this group before they start to fall. Dales ward has high levels of cancer hospital admissions compared with regional averages but has an average cancer rate for Nottingham City of 5.72 to 6.35 (see map below). A major challenge remains to sustain a reduction in cancer death rate inequalities across Nottingham City over the next few years.



➤ **Source: Public Health Mortality Data 2005**

➤ **Dales Ward Health Information**

Annual number of deaths in Dales Ward (Sneinton) = 140

Main causes

| | |
|---------------|---------------------------------|
| Heart disease | 30 |
| Cancer | 40 |
| Stroke | 10 (high – mainly under age 75) |
| Respiratory | 10 |

Hospital Admissions

High levels of admissions (3000 in total a year) due to:

- Cancer
- Heart disease under 75
- Accidents and injuries
- Mental illness
- Attempted suicide

➤ **Summary**

- Death rates higher than Nottingham City average but similar to other areas with the same levels of deprivation.
- About 25-30 deaths a year due to smoking in this ward alone (about 500 across Nottingham City)
- Incinerator contribution unknown but modeling suggests it is likely to be less than one death every 100 years across all of Nottingham (2700 deaths a year) and less than one admission a year (DEFRA May 2004).

- A summary of local conditions or circumstances relevant to the proposal (from sources of local routine and non-routine data) – taken from the planning application submitted by WRG

This table summarises the contribution from the municipal waste incineration (lines 1,2 and 3) compared with current background against recommended levels.

| Pollutants /averaging period | | Process Contribution ($\mu\text{g m}^{-3}$) for line 1,2,3 | Process Environmental Contribution ($\mu\text{g m}^{-3}$) (Process contribution + Background) (%) | Assessment levels ($\mu\text{g m}^{-3}$) | Process contribution as a percentage of the Air Quality Standard |
|--|------------|--|---|--|--|
| Nitrogen Dioxide | Annual | 1.03 | 37.3 (93) | 40* | 2.6 |
| | Hourly | 15.7 | 88.3 (44) | 200* | <u>7.9</u> |
| Sulphur Dioxide | 15 minutes | 4.77 | 32.2 (12) | 266* | 1.8 |
| | Hourly | 3.6 | 31 (9) | 350* | 1.0 |
| | 24 hour | 1.67 | 29.1 (23) | 125* | 1.3 |
| Particulates | Annual | 0.05 | 19.9 (50) | 40* | 0.1 |
| | 24 hour | 0.27 | 39.9 (80) | 50* | 0.5 |
| VOCs (annual mean as 1,3 butadiene) | | 0.051 | 0.34 (15) | 2.25* | 2.3 |
| Carbon Monoxide | 8-hour | 5.01 | 445 (4) | 10,000* | 0.05 |
| Cadmium & thallium | Annual | 0.26×10^{-3} | 1.2×10^{-3} (24) | 5×10^{-3} *** | <u>5.2</u> |
| Mercury | Annual | 0.26×10^{-3} | - | 0.25 | 0.1 |
| | Hourly | 6.3×10^{-3} | - | 7.5 | 0.08 |
| Other metals | Annual | 2.6×10^{-3} | - | 0.2**** | 1.3 |
| Hydrogen Chloride* | Annual | 0.051 | 0.051 ⁺ (0.2) | 20*** | 0.3 |
| Hydrogen Chloride | Hourly | 1.26 | 1.210 ⁺ (0.1) | 750** | 0.2 |
| Hydrogen Fluoride (hourly average) | | 0.13 | 0.13 ⁺ (0.1) | 160** | 0.08 |
| Dioxins & Furans (fg/ m^{-3}) | | Further -modelling underway (? 1-2%) | | | |

* UK Air Quality Standard

** Taken from Expert Panel on Air Quality Standards: guidelines for halogen and hydrogen halides in ambient air for protecting human health against acute irritancy effects. - draft for comments. <http://www.defra.gov.uk/corporate/consult/airqual-halogen/index.htm>

*** Taken as cadmium- Target value from Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air - - 15 December 2004

**** Used as the most stringent standard – that set for nickel, cobalt and arsenic.

Assumption is that background is 0

- Evidence from the Health Protection Agency - Waste and Health

- Municipal Solid Waste and Health

Waste is defined as 'any substance or object which the holder intends or is required to discard' (EC Waste Framework Directive) and this description is used to cover anything from the contents of a household dustbin (municipal waste) to commercial and industrial waste, agricultural waste and special or hazardous waste such as radioactive waste, and clinical wastes. Some 423 million tonnes of waste are produced in the UK each year, a quarter of which is from households, commerce and industry.

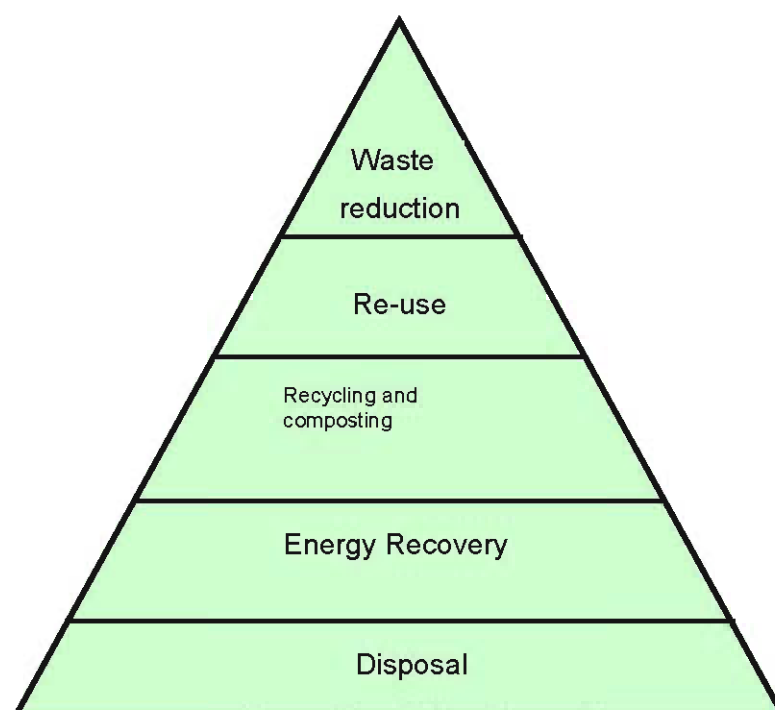
People produce waste, it is a fact of life; a fact which we cannot change. However, what we can change is the how much we produce, how we manage it, and what we do with it. Waste management is not just concerned with disposal; it is a sustainable process in which the generation, collection, processing and transport of wastes are considered as well as the minimisation of the production of waste and the reconceptualisation of waste as a resource. The public health impacts are influenced by the overall waste management strategy adopted locally, regionally and nationally.

National and Regional Waste Policy

The Governments vision for managing waste and resources is set out in the Waste Strategy 2000. It is influenced by the needed to deliver more sustainable development – decision makers must strike a balance between continued economic development and the need to protect and enhance the environment. Within this document the Government made a commitment to a "root and branch" review of the strategy in 2010, with "smaller" reviews in 2005 and 2015. One such interim review is under way currently, with expected publication in the first half of 2006.

The Strategy and its 2005 review (documented in 'Changes to Waste Management Decision Making Principles in Waste Strategy 2000') sets out the objectives of waste management decisions:

Reducing the environmental impact of waste by moving waste management up the waste hierarchy (see below);



Managing waste in ways that protect human health and the environment and in particular:

- Without risk to water, air, soil and plants and animals;

- Without causing a nuisance through noise or odours;
- Without adversely affecting the countryside or places of special interest;

Disposing of waste at the nearest appropriate installation, by means of the most appropriate methods and technologies.

The Regional Waste Strategy aims to provide local authorities; businesses; the waste management industry; and the householder with a framework to enable us all to change the way we produce and consume goods and towards a sustainable future. It is a framework for the delivery of principles and priorities for waste management, which were set out in the Regional Spatial Strategy i.e.

To work towards zero growth in waste at the Regional level by 2016

To reduce the amount of waste landfilled in accordance with the EU Landfill Directive

To exceed Government targets for recycling and composting

To take a flexible approach to other forms of waste recovery

Municipal solid waste disposal and impact on health

There have been numerous studies undertaken on waste management activities, including potential health effects linked to municipal solid waste. The Prime Minister's Strategy Unit, in its report "Waste not, Want not", recommended that an independent body should bring together the literature and evidence on the relative health and environmental effects of all the different waste management options; relative both to each other and to other activities affecting health and the environment. This has been a two-stage process. The first stage has been an assessment of the scientific evidence of the physical health and environmental effects of options to manage municipal solid waste and similar wastes and a report was published in May 2004. (DEFRA May 2004). (see Table 1 "Sources, pathways, emissions and potential effects of waste management methods" at Appendix 5).

An economic study completes the second stage. This report provides an assessment of the external costs and benefits to health and the environment of waste management options valued in monetary terms (DEFRA Dec 2004).

Incineration and health

Incineration involves the burning of waste to reduce the volume of solids for disposal and generates heat and/or electricity. To prevent emissions to atmosphere from the stacks, air pollution control systems are used which produce a fine ash - incineration changes biological hazards into chemical hazards in material. The resulting ash can be reused or sent to landfill.

Emissions of concern include: carbon dioxide (CO₂); acid gases – sulphur dioxide (SO₂) oxides of nitrogen (NO_x) hydrogen chloride (HCl) and hydrogen fluoride (HF); dioxins and furans; metals (arsenic, cadmium, mercury and nickel); particulate matter; polychlorinated biphenyls; and volatile organic compounds (VOCs).

3.3.3.1 Health Protection Agency Position Statement on incineration

The Health Protection Agency (HPA) as expert advisers to Primary Care Trusts (PCT) has issued a position statement on the health effects of Municipal Solid Waste incineration. The following sections are an extract from this position statement:

3.3.3.1.1 Public Health Impact

The general public can be exposed to atmospheric emissions associated with incinerators through a number of routes; by direct inhalation and/or by indirect entry via the food chain being of particular importance. (For many pollutants including some of the trace metals, and carcinogenic organic compounds (such as dioxins and furans), the major route of exposure is through the food chain.)

There is no doubt that air pollution (from all sources) can have an adverse effect on the health of susceptible people (i.e. young children, the elderly and particularly those with pre-existing respiratory disease). The adverse effects of airborne particles on health have been established through epidemiological studies and include increases in hospital admissions for both respiratory and cardiovascular disease, increased mortality and, when exposure is over long periods, reductions in life expectancy. There are also less severe but nonetheless important effects, such as increased symptoms in asthma sufferers. Other pollutants may have similar effects.

However, there is little evidence to suggest that incinerators are associated with increased prevalence of respiratory symptoms in the surrounding population. Modern, well-managed waste incinerators will only make a very small contribution to background levels of air pollution. Air-monitoring data demonstrate that emissions from the incinerators are not a major contributor to ambient air pollution. However, the contribution to local pollutant levels should be assessed on a site-specific basis. There have been some breaches of limits at this site, however both the Environment Agency and the Health Protection Agency are monitoring the situation.

The Health Protection Agency recognises that there are particular concerns over emissions of dioxins and furans from incinerators. The following opinion on the health effects of these compounds, and of tolerable daily intakes, i.e. the amount that can be ingested daily over a lifetime without appreciable health risk, is informed by the advice of the independent expert advisory Committee on the Toxicity of Chemicals in Food, Consumer Products and the Environment². This Committee has recommended a tolerable daily intake of 2 picogrammes TEQ/kg body weight/day³ based on a detailed consideration of the extensive toxicological data available on dioxins and identification of the most sensitive effect, namely, adverse effects on the developing fetus resulting from exposure in utero. As this was the most sensitive effect it will protect against the risks of other adverse effects including carcinogenicity. The advice of two other independent expert advisory committees, the Committee on the Carcinogenicity of Chemicals in Food, Consumer Products and the Environment⁴ and the Committee on Mutagenicity in Food, Consumer Products and the Environment⁵, informed the conclusion, namely that dioxins do not directly damage genetic material and that evidence on biological mechanisms suggested that a threshold based risk assessment was appropriate.

The majority (more than 90%) of non-occupational human exposure to dioxins occurs via the diet, with animal-based foodstuffs like meat, fish, eggs, and dairy products being particularly important. Limited exposure may also occur via inhalation of air or ingestion of soil depending on circumstances. Provided that strict emissions limits are adhered to, inhalation is not a significant source of exposure for the general public.

Atmospheric emissions are also important through deposition to growing crops and pasture grass from which they can be incorporated into foodstuffs, either directly into edible crops or, indirectly into animals that graze on the pastures. It is therefore possible that people who consume produce from local food chains within the area affected by emissions from the incinerator could receive a relatively higher exposure. However, current levels of dioxins emissions from incinerators are unlikely to increase the human body burden appreciably as incineration of municipal solid waste accounts for less than 1% of UK emissions of dioxins.⁶

² Available at <http://www.food.gov.uk/science/ouradvisors/toxicity/>

³ TEQ refers to Toxic Equivalents and is an internationally recognized method for considering the toxicity of mixtures of dioxins and furans based on considering their relative potencies compared to the most potent dioxin (tetrachlorodibenzodioxin, or TCDD)

⁴ Available at <http://www.advisorybodies.doh.gov.uk/coc/index.htm>

⁵ Available at <http://www.advisorybodies.doh.gov.uk/com/index.htm>

⁶ Available at <http://www.defra.gov.uk/corporate/consult/dioxins-two/report2.pdf>

However, dioxins and furans are highly persistent pollutants and we strongly support the Government policy to reduce dioxin exposures further by all practicable means and welcome the stricter emission limits applied under Waste Incineration Directive.

3.3.3.1.2 Health studies

Studies in the UK have principally focused on the possible effects of living near to the older generation of incinerators, which were significantly more polluting than modern plant. The Agency has considered studies examining adverse health effects around incinerators and is not aware of any consistent or convincing evidence of a link with adverse health outcomes. However it is accepted that the lack of evidence of adverse effects might be due to the limitations regarding the available data.

A number of comprehensive reviews on incineration have been published. The Department for Environment, Food and Rural Affairs⁷ have recently commissioned a review of the effects of waste management, which was peer reviewed by the Royal Society. Cancer, respiratory disease and birth defects were all considered, and no evidence was found for a link between the incidence of the disease and the current generation of incinerators. It concluded that although the information is incomplete and not ideal, the weight of evidence from studies so far indicates that present day practice for managing solid municipal waste has, at most, a minor effect on human health and the environment, particularly when compared to other everyday activities.

An earlier report by the Medical Research Council's Institute for Environment and Health on the "Health Effects of Waste Combustion Products"⁸ also concluded that 'epidemiological studies on people who work at or live near incinerators have shown no consistent excess of any specific disease'.

The Committee on the Carcinogenicity of Chemicals in Food, Consumer Products and the Environment⁹ has reviewed a large study by the Small Area Health Statistics Unit that examined 14 million people living within 7.5 km of 72 municipal solid waste incinerators, which operated up to 1987. The Committee concluded that, 'any potential risk of cancer due to residency (for periods in excess of ten years) near to municipal solid waste incinerators was exceedingly low and probably not measurable by the most modern techniques'. The HPA agrees with this view.

➤ Health Protection Agency Conclusion

Incinerators emit pollutants into the environment but provided they comply with modern regulatory requirements, such as the Waste Incineration Directive, they should contribute little to the concentrations of monitored pollutants in ambient air. Epidemiological studies, and risk estimates based on estimated exposures, indicate that the emissions from such incinerators have little effect on health. The Agency, not least through its role in advising Primary Care Trusts and Local Health Boards as statutory consultees for Pollution Prevention and Control (PPC), will continue to work with regulators to ensure that incinerators do not contribute significantly to ill health

(See also Appendix 5. Sources, pathways, emissions and potential effects of waste management methods from DEFRA, 2004. Review of environmental and health effects of waste management: municipal solid waste and similar wastes.)

⁷ Review of Environmental and Health Effects of Waste Management; Municipal Solid Waste and Similar Wastes, published May 2004. Available at <http://www.defra.gov.uk/environment/waste/research/health/>

⁸ Available at <http://www.le.ac.uk/ieh/pdf/R7.pdf>

⁹ The full statement can be found at <http://www.advisorybodies.doh.gov.uk/coc/munipwst.htm>

➤ **Anxiety & Distress**

HIAs must take account of the health effects arising from public anxiety about health impacts of waste management facilities (be they actual or perceived). Several studies have reported data on psychiatric symptoms amongst residents living close to a waste disposal site. Only 5 of these studies included samples of unexposed residents as a comparison group. There was some evidence to support the hypothesis that residents exposed to hazardous waste facilities exhibit greater levels of psychiatric morbidity than residents who are not exposed to such sites. However, it seems likely that at least some of this association might be explained by response bias, measurement bias and confounding. [REDACTED]

In this case, representatives from the community, particularly in Sneinton, have expressed considerable anxiety about the proposed developments and this is taken into account in the results section and recommendations.

• **Information from an HIA that was conducted on similar proposals**

➤ **HIA – Rugby PCT**

Rugby PCT undertook a Health Impact Assessment in August 2001 on a proposal by Rugby Cement to substitute chopped tyres for some of the coal as fuel in a cement kiln.

The company requested approval from the Environment Agency to replace some of the fuel used at its Rugby site with chopped old tyres. As the statutory consultee for health, Rugby Primary Care Trust raised concerns as to how the proposal to use tyres as fuel might affect the health of the population and, in June 2002, approached the Health Impact Assessment Research Unit (HIARU) at Birmingham University to conduct a Health Impact Assessment.

The HIA's term of reference was to assess the probability and magnitude of health impacts of substituting up to 40% chopped tyres for the coal fuel, which is currently used in Kiln 7 at the Rugby Cement works. The assessment paid attention to impacts on the population of Rugby, but also considered wider populations. It included consideration of the baseline situation and how health effects could be predicted and subsequently monitored.

The PCT compiled a list of hopes and concerns that people had in regard to the change in fuel. Further studies were then directed to assessing these hopes and concerns. Information on these issues was obtained by a selective literature review and information was obtained through discussion with various experts. A final report was published in August 2002 following consultation.

➤ **What did we learn from this?**

The document contains lessons learnt by the PCT during the HIA and this informed the way the stakeholder event was planned for the Nottingham HIA. We decided to focus discussion in small groups instead of having a question and answer session in order to maximise input from all participants.

Another learning point from the Health Impact Assessment Research Unit was that goodwill gestures to the communities affected by proposed interventions can help to mitigate against negative impacts.

- Results of the appraisal, including impacts on health and interventions to address those impacts.

➤ Stakeholder Event 12th October 2005 - New Mechanics Centre Nottingham

Dr Chris Packham, Director of Public Health, Nottingham City PCT chaired the event.

There were presentations as follows; -

- Proposed Eastcroft Energy from Waste Incinerator 3rd Line Extension; - Overview of Planning & IPPC process and HIA issues - [redacted] Nottingham City Council
- The Health Aspects of the Incinerator Expansion proposal – Waste Recycling Group
- The Community Perspective – [redacted] - a local resident
- Likely Health impacts – [redacted] Primary Care Trust [redacted] Health Protection Agency

(See agenda at Appendix 2)

5. Workshops – [redacted]

The workshops were designed to identify, group and prioritise the key issues for stakeholders and propose ways in which these could be addressed.

The objectives of the workshops was to; -

- identify what stakeholders perceive may be the key consequences of the proposed expansion of the incinerator.
- suggest what effect these consequences may have on the local population
- propose what actions can be taken to address these

There were three workshop themes – Social, Economic and Environmental

Participants identified their choice of workshop at the event and were assigned to groups with a facilitator. The final workshops were 1 for economics, 3 for environment and 2 for social issues and each contained a maximum of 7 participants.

Workshop Process

1. General introduction to workshops (Process, ground rules e.g. respect for each others differing points of view)
2. Introduction of group members. Participants were asked to write on post it notes, what they perceived to be the key environmental/economic/social consequences of the proposed incinerator expansion. The completed post its were then sorted by participants into issues and prioritised; -the themed issues using a green sticker for their first priority (3 points) a yellow sticker for their second priority (2 points) and a red sticker for their third priority (1 point)

Issues were then prioritised in relation to the number of points assigned to them. The highest priority being the one with the largest score.
3. In the order of their priority, participants brainstormed what they felt may be the effect of these consequences on the local population
4. Participants then brainstormed what they felt could be done to address these
5. A top priority from each group, possible consequences and proposed ways of addressing these, were then written on a card and given to the chair to feedback in plenary.

6. Each group was informed that their workshop feedback would be included in the report. Key points were summarised and participants were offered the opportunity to write down on a post it note any outstanding issues they had which they felt needed to be addressed. These would subsequently be presented to the HIA planning group for action and if would like a personal response, they were asked to leave contact details on the post it note.
7. The groups were then thanked for their efforts and the workshops closed
8. A key area for action agreed by the workshop participants was then fed back by the chair to the plenary

➤ **Results**

The issues and actions raised for each theme and the priority accorded to them have been grouped and analysed in the table below in order to provide a quick reference for the report. Examples of the type of issues/actions raised are also included. The 3 tables at Appendix 8 provide a full account of prioritised issues, consequences and actions from the six groups for this report; - themed broadly into Social, Economic and Environmental. The way the issues/actions were prioritised is explained in the Workshop Process section above. Those with the highest priority are shown as “Feedback points” followed by those with the highest numbers.

- Table illustrating key Social, Environmental and Economic themes that relate to Health and Health Equalities raised at the Stakeholder Event.



| Key Themes from Social, Environmental and Economic groups | Total No. of issues raised + actions proposed ¹⁰ | No of Groups raising issues/ actions | Prioritised score ¹¹ | Example of issue raised / action proposed |
|---|---|--------------------------------------|-------------------------------------|--|
| Air quality | 28 + 23 | 5 | 5, 9, feedback points, 13, 12 | Concern over level of emissions means I keep children inside and am afraid to open windows |
| Climate Change | 2 | 1 | | What about CO ₂ SO ₂ - non-toxic (?) but significant in terms of climate change |
| Development | 3 | 2 | 6, 5 | Development of riverside – very promising mixed development - developers are not happy about presence/expansion of incinerator |
| District heating | 1 | 1 | - | Expanded Incinerator will generate more heat and electrical energy for the District Heating Scheme although this needs to be offset against the energy saved by recycling the waste possibly as much as four times. However, there is already spare capacity in the District Heating Scheme. |
| Emotional well-being | 6 | 1 | 8 | People in Sneinton bearing the brunt of the City's waste disposal Local people feel under valued – nobody cares – nobody listens |
| Energy | 5 | 2 | 4 | Squanders energy when energy is becoming scarce and therefore is wealth reducing (by reducing recycling of waste)=health reducing over next 30/40 years. |
| Food | 12 + 2 | 4 | Feedback points / | Food grown on allotments being contaminated by dioxins, heavy metals Have the large numbers of allotments (and food growing) in deprived areas been taken into account? Will baselines of monitoring be established on all food-growing sites in significant radius? |
| Health | 8 | 1 | 9 | Local people becoming depressed and need more from health care / Respiratory/ Cancer /issues |
| Health inequalities | 38 + 12 | 5 | Feedback points 7 6 5 7 | Expanding the incinerator – there are perceptions that this will create adverse effects that will increase inequalities both in Sneinton and the surrounding area Reassurance needed for the local community from a credible body, that tighter controls would be implemented with appropriate penalties. |
| House prices | 5 + 3 | 1 | Feedback points | Some more economically active people may decide to move away from the area, house prices may drop particularly with increased lorry movements along main centres – possible implications for local shops etc |

¹⁰ Issues & actions separated by a '+'. Some of the same issues repeated but illustrates level of concern

¹¹ Where more than one group, group scores separated by a ',' Highest priority shown as Feedback points followed by those with the highest numbers

| Key Themes from Social, Environmental and Economic groups | Total No. of issues raised + actions proposed ₁₀ | No of Groups raising issues/ actions | Prioritised score ₁₁ | Example of issue raised / action proposed |
|---|---|--------------------------------------|---------------------------------|---|
| Inequalities | 19 + 7 | 2 | 12 | Social capital decrease Health monitoring and research into effects Recycling projects, composting projects and educate schools |
| Inclusion | 2 | 1 | 1 | <ul style="list-style-type: none"> • Involvement of communicating this process to BME population – positive ?? |
| Jobs | 6 + 2 | 1 | Feedback points | <ul style="list-style-type: none"> ▪ Recycling is very lab. Intensive – fewer potential jobs if incinerator is extended |
| Pollution | 33 +2 | 5 | 13, 5, 9, | <ul style="list-style-type: none"> ▪ Increased air pollution due to emissions from incinerator ▪ Increased air pollution due to increase in heavy vehicular traffic bringing waste from outside city ▪ Should take into account contributory effect – may not be a big problem on own but combined with other sources of pollution, health problem makes a big difference ▪ Emissions of dioxins and what are my children exposed to when we eat vegetables grown at local allotment <p>Precautionary principle - do we really know outcomes?</p> |
| Recycling | 17 + 9 | 5 | 5, 5, 4 | Nottingham needs to increase recycling to meet government targets Recycling can provide five times more jobs than incineration |
| Traffic | 26 | 4 | 7, 5 | Increased lorries to and from the site |

➤ Interpretation

The groups raised a number of issues consequences and actions to do with health environment and waste. The most frequently raised themes were Air Quality, Health Inequalities, Pollution, Traffic, and Recycling and these were also given the highest priority. Some of these points were repeated but the scoring reflects the level of concern for the theme. The tables should be studied as the information above is intended to provide **only a snapshot** of the issues raised and interpretation is needed before drawing any conclusions.

6. Discussion

On the basis of the best available evidence, the conclusion of the Health Protection Agency is that incinerators emit pollutants into the environment but provided they comply with modern regulatory requirements, such as the Waste Incineration Directive, they should contribute little to the concentrations of monitored pollutants in ambient air. Epidemiological studies, and risk estimates based on estimated exposures, indicate that the emissions from such incinerators have little effect on health.

Although the issues raised at the stakeholder event do not affect the evidence from the Health Protection Agency, the social impacts, - perceptions and reality of area, effect on investment, multiple risk factors, anxiety, extra lorries – can be just as real to residents.

Psychiatric morbidity amongst residents living close to hazardous waste sites might be improved through transparent and accurate communication of the health risks involved, with the aim of alleviating the heightened yet understandable concern in the exposed population. A well-run HIA process will do this at the same time as making more quantitative analyses of health risks.

A review of the different waste management options demonstrates that all produce emissions that have the potential to harm health. It is impossible to say that a strategy maximising recycling and composting and minimising incineration and landfill will reduce local health impacts. The areas where better evidence to support HIA of waste strategies most immediately needed are;

- 1 More sophisticated spatial epidemiology of health outcomes married to dispersion modelling of emissions;
- 2 More investigation of the role of confounding factors in determining psychological morbidity of individuals living close to waste facilities and evaluation of interventions directed to preventing psychological morbidity.....

([redacted] 2004)

The Business case

The section within the Health Protection Agency's evidence on National and Regional Waste Policy illustrates that there are national and regional drivers to reduce the amount of waste produced; - The Regional Strategy is a framework for the delivery of principles and priorities for waste management, which were set out in the Regional Spatial Strategy i.e.

- To work towards zero growth in waste at the Regional level by 2016
- To reduce the amount of waste landfilled in accordance with the EU Landfill Directive
- To exceed Government targets for recycling and composting
- To take a flexible approach to other forms of waste recovery

In this case representatives from the community, particularly in Sneinton have expressed considerable anxiety about the proposed developments and the local media has published a number of articles about these concerns. Nottingham Against Incineration and Landfill (NAIL) is a local pressure group that has campaigned hard against this expansion, e.g. they held a demonstration against it a week before this event. Their concerns are detailed in a letter in Appendix 7 in the Community Contributions – Post Stakeholder event section.

Evidence from other HIAs has demonstrated that goodwill gestures to the community who do not want proposals to go ahead help to mitigate against the negative impacts.¹²

¹² Liverpool Public Health HIA course November 2005 – [redacted]

7. Conclusions

The scientific evidence, based on the best available information, is that incinerators emit pollutants into the environment but provided they comply with modern regulatory requirements, such as the Waste Incineration Directive, they should contribute little to the concentrations of monitored pollutants in ambient air and therefore there would be no significant negative impact on the health of the population living in the vicinity of the proposed incinerator expansion. The scientific evidence therefore infers that there would be no significant negative impact on the health of the population living in the vicinity of the proposed incinerator expansion. However, the qualitative evidence from the stakeholders at the event held on 12 October and from information forwarded by community representatives subsequent to the event, suggests that this expansion would result in a negative impact on social environmental and economic factors which could in turn negatively affect health e.g. through increasing existing health inequalities.

If the decision is to go ahead with the expansion, we would recommend including mitigating actions against potential health risks e.g. by considering implementing some of the actions put forward at the event.

8. Recommendations

These recommendations address the last three HIA steps outlined in the Introduction; -
Step 4; formulating and prioritising recommendations,
Step 5: further engagement with decision makers and
Step 6; ongoing monitoring and evaluation

1. An action plan based on the priority issues agreed by stakeholders should be developed and agreed by the City Council.
2. An incinerator expansion steering group should be established with the responsibility for overseeing the implementation of the action plan and to liaise with the Environment Agency over reporting arrangements for surveillance of emissions and noise. This should take account of existing reporting arrangements under the PPC permit, regularly reviewed by the Eastcroft Liaison Committee. Members to be drawn from the same organisations as on the HIA steering group with additional members from Waste Recycling Group (WRG), the incinerator expansion company, and the local community.
3. The beneficiaries of the expansion should be asked to invest a proportion of the income generated in the community most affected; - i.e. Sneinton, Netherfield and Lady Bay, e.g. subsidised heating or an acceptable alternative. Evidence from other HIAs has demonstrated that goodwill gestures to the community who do not want proposals to go ahead help to mitigate against the negative impacts.
4. Monitoring of potential health impacts is potentially highly challenging because of the relatively small effect compared with all other determinants of health that we anticipate the incinerator will make. We recommend further work with the East Midlands Public Health Observatory to explore the potential for robust ways of monitoring possible health impacts in the future.
5. More investigation of the role of confounding factors in determining psychological morbidity of individuals living close to waste facilities and evaluation of interventions directed to preventing psychological morbidity.....(██████████ – 2004)
6. The business case for the expansion should be reviewed by WRG and Nottingham City Council; - On the basis that the business case is robust, the advantages of the expansion are likely to outweigh the minor negative health impacts. During the HIA process however, questions emerged about how robust the business case for the expansion is and these should be examined.

9. References

Cook A & Kemm J *Health Impact Assessment Report On Proposal to substitute chopped tyres for some of the coal as a fuel in cement kiln* www.rugby-pct.nhs.uk/Latest/HealthImpactAss.htm

Health Impact Assessment from Rugby PCT:
<http://www.rugby-pct.nhs.uk/Latest/HealthImpactAss.htm>

Documents (including critiques of the HIA reports) from the pressure group (RIP-Rugby In Plume).
http://www.rugbyinplume.org/html/body_documents.html

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➤ **Website addresses**

Nottingham City Council www.nottinghamcity.gov.uk/
Waste Recycling Group - www.wrg.co.uk/

10. Appendix 1

Representatives of organisations invited; -

National Health Service

- Hospital Respiratory consultants – Nottingham City and Queens Medical Centre
- GPs in Sneinton, Broxtowe & Hucknall, Netherfield & Lady Bay
- NHS Direct
- 4 Primary Care Trusts including Broxtowe & Hucknall, Nottingham City, Gedling and Rushcliffe drawn from Public Health – e.g. Directors, Trainees, Assistant Director
- Patient Partnership team for all forums – Hospitals and PCTs
- Health Protection Agency East Midlands (Non Governmental Public Body)

Local Authorities

- Local Area Committees
- Local Authorities whose area includes Broxtowe & Hucknall, Nottingham City, Gedling and Rushcliffe including & including Nottinghamshire County Council drawn from; -
 - Environmental Health
 - Local Councillors
 - City Council, Area 6 Committee, - via Co-ordinator
 - Waste Manager
- **Community / Voluntary Sector; -**
- Health in Your Environment Voluntary Sector Forum
- Tenants groups/forums – Meadows, Gedling, City, Lady Bay.
- Self Help Nottingham
- Breathe Easy
- Cancer / Leukemia groups
- Mental Health groups – AWAAZ, Community MH Team, Naizindagi
- Age Concern Nottinghamshire
- Nottingham Council for Voluntary Services
- Indigo Brave
- Allotment growers in Sneinton
- Nottingham Against Incineration and Landfill – pressure group

Local Partnerships

- Food Initiatives Group
- Nottingham Health Action Team
- Air Quality steering group

Others

- Nottingham Trent University
- Nottingham University
- National Society for Clean Air
- West Midlands Public Health Group, Dept of Health
- Birmingham University – Health Impact Assessment expertise
- The Food Standards Agency
- East Midlands Regional Assembly
- Environment Agency
- School representatives – Head teachers in Sneinton
- Waste Recycling Group – Head Office, Eastcroft and the author of the HIA within the Environmental Statement
- Waste Managers and Companies,
- Government Office East Midlands – policy field,
- East Midlands Development Agency

- Sub Regional Strategic Partnership
- Media – Nottingham Evening Post

- Attendance List & Apologies List

| Name | Organisation | Group – Environmental – Env Economic – Econ Social – Soc Facilitator – (F) Speaker – (S) |
|------|--|---|
| | HPA East Midlands | Env |
| | Principal EHO Rushcliffe Borough Council | Env |
| | Public Health Trainee | Env (F) |
| | Gedling BC | Env |
| | | |
| | Area 6 Focus Team | Soc |
| | Gedling PCT | Econ |
| | Ecoworks | Econ |
| | Trainee | Soc |
| | Nottingham City PCT | Env (F) |
| | Nottingham City PCT | (S) |
| | Nottingham City PCT | Soc (F) |
| | Environment Agency | Env |
| | Nottingham City Co | |
| | HPA | (S) |
| | NAIL | Soc |
| | Nottingham City PCT | Env |
| | Nottingham City PCT | Co-ordination |
| | Nottingham City PCT | Env (F) |
| | Trainee | Soc (F) |
| | Nottingham City PCT | Observer |
| | SHA | Soc |
| | Nottingham City PCT | Soc |
| | Trainee | Env |
| | East Midlands PH Team | Env (F) |
| | Nottingham CVS | Env |
| | Parent Rep | (S) Soc |
| | Meadows HC | Soc |
| | STAA Ltd | Env |
| | Nottingham City Co | Env |
| | Nottm City Council | Env |
| | HIYE | Env |
| | DoH EM | Soc (F) |
| | WRG | (S) |
| | Newark & Sherwood PCT | Econ (F) |
| | Broxtowe BC | Env |
| | Nottingham Energy Partnership | Env |
| | Birmingham University | Soc |
| | Nottingham City Co | (S) |
| | Environment Agency | Env |
| | Notts Transport 2000 | Env |
| | First Report | Env |

| | | |
|--------------|--------------------|----------|
| [REDACTED] | NEP | Observer |
| [REDACTED] | WRG | (S) |
| Co Sue Blant | Councillor | Env |
| [REDACTED] | Environment Agency | Env |

Apologies

- [REDACTED] - NCHA
- Co Brian Grocock – Nottm City Co
- [REDACTED] Nottingham Evening Post
- [REDACTED] Nottingham University
- John Heppell MP
- [REDACTED] Greater Nottingham Partnership
- [REDACTED] Nottinghamshire County Council
- [REDACTED] Chase Action Group

11. Appendix 2

• Agenda

| | |
|------|---|
| 5.30 | Steering group preparations including facilitators briefing |
| 6pm | Arrival, registration & refreshments |
| 6.15 | Welcome & Introduction to the HIA stakeholder event [redacted] Nottingham City NHS Primary Care Trust |
| 6.20 | <i>Proposed Eastcroft Energy from Waste Incinerator 3rd Line Extension; - Overview of Planning & IPPC process and HIA issues -</i> [redacted] Nottingham City Council |
| 6.30 | <i>The Health Aspects of the Incinerator Expansion proposal –</i> [redacted] Waste Recycling Group representative (see below for content of presentation) |
| 6.40 | <i>The Community Perspective –</i> [redacted] a local resident |
| 6.50 | <i>Likely Health impacts –</i> [redacted] PCT [redacted] – Health Protection Agency |
| 7pm | HIA workshop introduction – [redacted] |
| 8.10 | comfort break |
| 8.15 | Feedback – [redacted] |
| 8.25 | Summary & way forward – [redacted] |
| 8.30 | Close |

Chair for event; - [redacted]

Independent/impartial chair with no involvement in LA planning or IPPC process, therefore Health/PCT or Academia.

Co-ordination - [redacted] / Public Health Development Manager – City PCT / Nottingham Health Action Team

Speakers – as listed in the Agenda

Facilitators

| | | | |
|------------|-------------------------------|------------|----------------------------------|
| [redacted] | Assistant Director – City PCT | [redacted] | GOEM |
| [redacted] | - City PCT | [redacted] | - Newark & Sherwood PCT – Social |
| [redacted] | GOEM – Social | [redacted] | PH Trainee |
| [redacted] | PH Trainee | [redacted] | |
| [redacted] | - Nottm City PCT | [redacted] | |

Registration

[redacted] PH Trainee [redacted]

- **Content of Presentation from Waste Recycling Group**

(Note: - converted into Word format in order to include in report)

Slide 1 - Eastcroft Energy from Waste Facility Expansion - Potential Impacts on Health
Nottingham PCT NHS Trust
Stakeholder Event

12th October 2005

Slide 2 - Waste and health – principles

Waste contains many thousands of chemicals and many species of microorganisms
All chemicals are toxic if the exposure is high and long enough
However for the great majority of chemicals a threshold is found below which toxicity is very unlikely
All methods of waste treatment involve the destruction of some substance but the creation of others
The milder the methods the less the original substances are destroyed and the less new substances are created

Slide 3 - How the risk from waste management methods is assessed

Epidemiological studies around comparable facilities
Measurements of chemicals of interest taken around comparable facilities
Modelling of ground level concentrations from the maximum permitted emission levels
Use of this modelling to estimate exposure of the local population to chemicals of interest through air, food, water etc
Comparison of concentrations with air quality standards

Slide 4 - Materials of interest include:

Metals
Acidic gases
Fine particles such as PM10
Dioxins and polycyclic aromatic hydrocarbons
Volatile organic compounds such as benzene
Microorganisms
Allergenic proteins

Slide 5 - Public concerns - dioxins

A family of chemicals created by any combustion process
Many related substances (e.g.: PCBs), some very persistent
Different dioxins have very different potencies. Some are carcinogenic and some may affect the nervous system or the skin
Inevitably present in municipal solid waste

Slide 6 - Dioxins continued

The key consideration is the total exposure over many months or years
Dioxins are mainly ingested rather than inhaled
Main source of human exposure is fatty foods
Children are more vulnerable

Slide 7 - Public concerns- particulate matter

Range of sizes; the smaller the particle the higher the potential risk
Primary sources are road transport, combustion processes

Also produced by some cooking methods
Can have acute health effects, such as respiratory and heart
Vulnerable groups: those with severe respiratory and coronary disease

Slide 8 - Methods of waste treatment- consideration of emissions

Microbiological/spontaneous (e.g. landfill, composting)

Heat/combustion (e.g. incineration, landfill gas burning)

Physical separation (e.g. leachate from landfill and biological treatment)

The milder the treatment the more of the initial contaminants are left in the waste residue

Slide 9 - Incinerator emissions

Many incinerators in the 1950's-1960's caused local pollution

Modern incinerators have 1/100th -1/1000th of the emission levels of dioxins, particulate matter and metals compared to these old incinerators

Dioxins – incinerators contribute less than 1% of total UK emissions

Particulate Matter – incinerators contribute less than 0.1% of total UK emissions

Slide 10 - Recent independent evaluations of potential health risks from incinerators

Public Inquiries on proposed incinerators at Hull, Portsmouth, Kidderminster and Bexley, all of which have concluded that the health risk is insignificant

DEFRA report in 2004 which has concluded the total impact from all the incinerators in the UK is negligible

Importantly, the DEFRA report included a review of epidemiological studies. The review “did not find a link between the current generation of MSW incinerators and health effects”.

Slide 11 - Eastcroft – Assessment of Health Effects

Emissions from stack modelled using dispersion modelling

Ground level concentrations compared with standards - less than 8% of standard in worst case for expanded plant

Dioxin assessment included ingestion through food. Contribution less than 2.5% of tolerable daily intake

Slide 12 - Conclusions

Waste contains many thousands of natural and synthetic chemicals

Treatment inevitably results in some emissions

Operation of well-managed modern incinerators is unlikely to result in a risk to the health of the local population

Specifically, Eastcroft will make an insignificant contribution to local air quality

Slide 13 - Eastcroft Energy from Waste Facility Expansion

Impacts on Health

Nottingham PCT NHS Trust

Stakeholder Event

12th October 2005

12. Appendix 3

• Eastcroft Incinerator Expansion – planning context

- 1) Planning decisions should be based on the Development Plan, which includes Regional Spatial Strategy and the Waste Local Plan. (The Structure Plan and Local Plan may also be relevant, but are not considered here.)
- 2) The overarching level of the Development Plan is Regional Spatial Strategy (RSS8), published by ODPM in March 2005. Policy 39 requires, amongst other things,
 - All local authorities to achieve a minimum target of 50% recycling by 2015;
 - Waste Local Plans to take into consideration:
 - The Best Practicable Environmental Option (BPEO) for each waste stream;
 - Socio-economic implications;
 - The principle of regional self-sufficiency;
 - The proximity principle: and
 - The waste hierarchy.
 - Waste Local Plans to promote additional waste management capacity illustrated in Figures 3 and 4. [Fig 3 shows just 0.5m tonnes capacity for 'other recovery' for the whole region in 2015, based on Option 2 in a Technical Report, which allocates for Nottinghamshire 54,000 tonnes municipal waste and 53,000 tonnes commercial & industrial waste for 'energy recovery' in 2015.]
- 3) The Waste Local Plan (WLP) for Nottinghamshire and Nottingham did not take into consideration the BPEO for each waste stream, but does include Policy W2.1 which states that "Waste management proposals will only be permitted where they represent the best practicable environmental option, based on a hierarchy within which the order of preference is:
 - Reduction
 - Re-use
 - Recovery – composting and recycling
 - Recovery – energy from waste
 - Disposal with environmental benefits"

BPEO is defined as "the outcome of a systematic consultative and decision making procedure . . ." (WLP section 2.21). It should also be judged against the waste hierarchy and the proximity principle (section 2.19).

Other relevant policies in the WLP include

Policy W3.1 that requires need for a facility to be balanced against environmental impacts. Policy W6.1 that supports expansion of the Eastcroft Incinerator on the basis that it would result in more of Nottinghamshire's waste being managed higher up the waste management hierarchy (WLP section 6.12).

Planning decisions must also be in accordance with the principles and objectives in the Government's waste policy, Waste Strategy 2000 which states in paragraphs 4.4 and 4.5:

4.4 The objectives of waste management decisions should be:

- Reducing the environmental impact of waste by moving waste management up the waste hierarchy;
- Managing waste in ways that protect human health and the environment and in particular:
 - Without risk to water, air, soil and plants and animals;
 - Without causing a nuisance through noise or odours;
 - Without adversely affecting the countryside or places of special interest;
- Disposing of waste at the nearest appropriate installation, by means of the most appropriate methods and technologies.

4.5 Waste decision-making should be based on the following principles:

- Individuals, communities and organisations should take responsibility for their waste;
- In taking decisions there should be consideration of alternative options in a systematic way;

- Effective community engagement should be an important and integral part of the decision making process;
- The environmental impacts for possible options should be assessed looking at both the long and short term;
- Decisions should seek to deliver the environmental outcomes that do most to meet the objectives in paragraph 4.4 above, taking account of what is feasible and what is an acceptable cost. PPS10 may also be material to decisions on planning applications.

Extract from PPS10 relating to health:

Health

30. Modern, appropriately located, well run and well-regulated, waste management facilities operated in line with current pollution control techniques and standards should pose little risk to human health. The detailed consideration of a waste management process and the implications, if any, for human health is the responsibility of the pollution control authorities. However, planning operates in the public interest to ensure that the location of proposed development is acceptable and health can be material to such decisions.

31. Where concerns about health are raised, waste planning authorities should avoid carrying out their own detailed assessment of epidemiological and other health studies. Rather, they should ensure, through drawing from Government advice and research and consultation with the relevant health authorities and agencies, that they have advice on the implications for health, if any, and when determining planning applications consider the locational implications of such advice. In turn, the relevant health authorities and agencies will require sufficient understanding of the proposed waste management process to provide considered advice. A concurrent process and a transparent relationship between the planning and pollution control regimes will help facilitate this.

Source:  e mail 2 11 05

13. Appendix 4

- Greenhouse gas emissions from municipal waste – extract from US Environmental Protection Agency Report

'Solid waste management and greenhouse gases: a life cycle assessment of emissions and sinks'. USEPA (2002) Second Edition.

<http://www.epa.gov/epaoswer/non-hw/muncpl/ghg/greengas.pdf>

(Negative shows avoided greenhouse gas emissions. Figures are based on industry average for the USA, and show metric tonnes of CO₂ equivalent per short ton of waste.)

| Exhibit ES-5 | | | | | |
|---|-------------------------------|-----------|-------------------------|-------------------------|--------------------------|
| Net GHG Emissions from Source Reduction and MSW Management Options - Emissions Counted from a Waste Generation Reference Point (MTCO ₂ E/Ton) ¹ | | | | | |
| Material | Source Reduction ² | Recycling | Composting ³ | Combustion ⁴ | Landfilling ⁵ |
| Aluminum Cans | -9.15 | -15.07 | NA | 0.06 | 0.04 |
| Steel Cans | -2.89 | -1.79 | NA | -1.53 | 0.04 |
| Glass | -0.50 | -0.28 | NA | 0.05 | 0.04 |
| HDPE | -1.79 | -1.40 | NA | 0.85 | 0.04 |
| LDPE | -2.25 | -1.71 | NA | 0.85 | 0.04 |
| PET | -1.78 | -1.55 | NA | 1.04 | 0.04 |
| Corrugated Cardboard | -1.89 | -2.60 | NA | -0.68 | 0.28 |
| Magazines/Third-class Mail | -3.30 | -2.70 | NA | -0.49 | -0.44 |
| Newspaper | -2.97 | -3.48 | NA | -0.77 | -0.76 |
| Office Paper | -2.95 | -2.48 | NA | -0.65 | 2.28 |
| Phonebooks | -4.70 | -3.34 | NA | -0.77 | -0.76 |
| Textbooks | -4.49 | -2.74 | NA | -0.65 | 2.28 |
| Dimensional Lumber | -2.01 | -2.45 | NA | -0.81 | -0.38 |
| Medium-density Fiberboard | -2.20 | -2.47 | NA | -0.81 | -0.38 |
| Food Discards | NA | NA | -0.20 | -0.19 | 0.62 |
| Yard Trimmings | NA | NA | -0.20 | -0.23 | -0.34 |
| Mixed Paper | | | | | |
| Broad Definition | NA | -2.47 | NA | -0.68 | 0.37 |
| Residential Definition | NA | -2.47 | NA | -0.68 | 0.25 |
| Office Paper Definition | NA | -3.05 | NA | -0.62 | 0.56 |
| Mixed Plastics | NA | -1.51 | NA | 0.93 | 0.04 |
| Mixed Recyclables | NA | -2.80 | NA | -0.61 | 0.19 |
| Mixed Organics | NA | NA | -0.20 | -0.21 | 0.12 |
| Mixed MSW as Disposed | NA | NA | NA | -0.13 | 0.24 |

Note that totals may not add due to rounding, and more digits may be displayed than are significant.

NA: Not applicable, or in the case of composting of paper, not analyzed.

¹MTCO₂E/ton: Metric tons of carbon dioxide equivalent per short ton of material. Material tonnages are on an as-managed (wet weight) basis.

²Source reduction assumes initial production using the current mix of virgin and recycled inputs.

³There is considerable uncertainty in our estimate of net GHG emissions from composting;

the values of zero are plausible values based on assumptions and a bounding analysis.

⁴Values are for mass burn facilities with national average rate of ferrous recovery.

⁵Values reflect estimated national average methane recovery in year 2000.

ES-12

Source: [REDACTED] - HIYE 4/11/05

14. Appendix 5

- **Impact of Incineration on health**

Factors associated with waste management, which might have an impact on health:

- may be beneficial, damaging or neutral.
- may be present in waste or formed during the waste management process
- will be different for each of the waste management methods – landfill, incineration, composting, sewage sludge, sewage treatment
- **Physical**
 - Organic chemicals e.g. polyaromatic hydrocarbons, dioxins, pesticides
 - Heavy metals e.g. arsenic, mercury, lead
 - Dust e.g. lead dust
 - Microbial pathogens e.g. clostridium botulinum, enteric bacteria
 - Inorganic chemicals e.g. nitrogen sulphide
 - Transport / remediation work at landfill sites – accidents and pollution
 - Fire and explosion e.g. methane from landfill sites; tyres
- **Psychosocial factors**
 - Quality of life – odour, litter, noise; sewage on beaches
 - Psychological factors – concern, stress, worry of residents; distrust of government and scientific institutions, powerlessness – but benefit to community cohesion of activism against sites; also around composting.
- **Occupational**
 - Health and safety of workers
 - Employment – e.g. incineration, mainly in building the plant
- **Environment**
 - Global warming – landfill gases add if not utilised; incineration adds through carbon dioxide generation
 - Resource conservation – landfill and incineration depletes as simply dump your resources cf. reuse and recovery

Conclusion of South West PHO systematic review

The nature of existing epidemiological research in this area is such that most studies are useful for generating hypotheses but is unable to test the hypotheses or to provide convincing evidence of an association between exposure and a health impact.

For most waste management methods, the evidence is insufficient to claim that adverse health outcomes will result.

Implementation of the Waste Hierarchy and adoption of an integrated waste management strategy at national, regional and local level will be the most effective way to reduce the health risks from waste management procedures.

(source: South West PHO systematic review)

Table 1. Sources, pathways, emissions and potential effects of waste management methods from DEFRA, 2004. Review of environmental and health effects of waste management: municipal solid waste and similar wastes.

| Source (Waste disposal method) | Emission(s) | Pathway(s) | Receptor(s) | Potential effects | |
|--|---|--|--|--|---|
| | | | | Human | Environmental |
| Landfill | Dust; odour; micro-organisms; litter; landfill gas (CH ₄ , CO ₂ and numerous trace compounds); exhaust gases from combustion of landfill gas (including carbon dioxide, carbon monoxide, oxides of nitrogen, sulphur dioxide, and other trace components) | Air- emissions of materials to air directly from the landfill during tipping, compacting, covering and storage activities; emissions to air of fugitive landfill gas; emissions to air of products of landfill gas combustion. | Nearby sensitive receptors in the vicinity of the landfill site; nearby sensitive habitats | Potential for exposure to a variety of potentially harmful materials which have been investigated in connection with birth defects, asthma, respiratory disease and cancer | Potential for soil acidification due to deposition of acid gases; increases in soil metals; vegetation damage due to oxides of nitrogen (NO _x) and sulphur dioxide (SO ₂) |
| | Leachate containing salts, heavy metals, biodegradable and persistent organics to groundwater, surface water and sewer | Water- leaching of materials into groundwater and surface waters due to fugitive escapes of leachate; emissions of treated and untreated leachate via permitted routes | Nearby sensitive receptors, groundwater users and surface water users; nearby sensitive habitats | | Potential for contamination of ground and surface water with metals, organic compounds, bioaccumulation of toxic materials |
| | Metals (Zinc (Zn), lead (Pb), copper (Cu), arsenic (As)), and various organic compounds | Land-contamination of land during post-operative phase | Nearby sensitive receptors and users of post operative site | | Potential for contamination of flora and fauna in contact with contaminated land, and possible bioaccumulation of toxic materials in flora and fauna |
| Thermal treatment (including incineration) | Emissions of SO ₂ , NO _x , hydrogen chloride, hydrogen fluoride, volatile organic compounds (VOCs), carbon monoxide, carbon dioxide (CO ₂), nitrous oxide (N ₂ O), dioxins and furans, metals (Zn, Pb, Cu, As), dust, odour, micro-organisms | Air- emissions from waste during handling and storage operations; emissions of materials during handling of waste ash; emissions of gases and particles from combustion of waste | Nearby sensitive receptors; nearby sensitive habitats; sensitive receptors within the influence radius of the combustion gas plume; sensitive receptors exposed to ash during re-use | Potential for exposure to harmful materials which have been investigated in connection with cancer, asthma, respiratory disease, birth defects | Potential for soil acidification due to deposition of acid gases; increases in soil metals/dioxins; vegetation damage due to NO _x and SO ₂ |
| | From deposition of combustion gases: | Water- Deposition of hazardous substances to | Nearby sensitive aquatic habitats; receptors | No significant effects likely | Possible minor contribution to |

| Source (Waste disposal method) | Emission(s) | Pathway(s) | Receptor(s) | Potential effects | |
|-----------------------------------|--|--|--|---|--|
| | | | | Human | Environmental |
| | <p>sulphuric, carbonic and nitric acids, particulate matter, metals (including Zn, Pb, Cu, As), dioxins and furans</p> | <p>surface water; In some cases discharge of waste coolant water to licensed discharge point</p> | <p>downstream of waste water treatment works; receptors downstream of final waste water sludge effluent disposal route</p> | | <p>acidification</p> |
| | <p>From ash: metals (including Zn, Pb, Cu, As), dioxins and furans; From deposition of combustion gases: sulphuric, carbonic and nitric acids, particulate matter, metals (including Zn, Pb, Cu, As), fluoride, chloride, dioxins and furans</p> | <p>Land- disposal of bottom ash and fly ash residues to land via ash reuse programs; leaching of materials from landfilled ash; deposition of combustion gases and particles to land from airborne emissions</p> | <p>Sensitive receptors exposed to soil contaminated with ash or deposited emissions, or to produce grown in contaminated soil;</p> | <p>Potential exposure to metals, dioxins and furans. Has been investigated in relation to cancer and birth defects.</p> | <p>No significant effects likely</p> |
| Com-posting | <p>Methane, carbon dioxide, dust, odour, bacteria, fungi</p> | <p>Air- emissions of from waste handling, compost generation and compost removal operations</p> | <p>Nearby sensitive receptors</p> | <p>Potential for exposure to harmful bacteria and fungi. Investigated in connection with respiratory and other diseases</p> | <p>No significant effects likely</p> |
| | <p>Trace contaminants in original compost feedstock. Might include: metals and organic compounds</p> | <p>Land- potential for transfer of contaminants from compost into subsequently treated soils, and potential for contamination of food chain</p> | <p>Sensitive receptors exposed to soil fertilised with compost and to produce grown in contaminated soil</p> | <p>Potential for exposure to contaminants in original feedstocks via deposition to soils when compost used on soils. Potential for uptake by produce of fertilised land</p> | <p>Potential for increase in contaminants in original feedstocks when compost used on soils.</p> |
| Materials Recycling Facility | <p>Dust and odour</p> | <p>Air- emission of materials during waste storage and sorting</p> | <p>Nearby sensitive receptors</p> | <p>Potential for dust and odour nuisance; possible ill health due to dust inhalation</p> | <p>No significant effects likely</p> |
| | <p>Organic compounds, produce residues, surfactants</p> | <p>Water- emissions of materials during cleaning of facility and materials,</p> | <p>Receptors downstream of waste water treatment works; receptors downstream of final sludge effluent disposal route</p> | <p>No significant effects likely</p> | <p>No significant effects likely</p> |

| Source (Waste disposal method) | Emission(s) | Pathway(s) | Receptor(s) | Potential effects | |
|-----------------------------------|---|---|---|--|--|
| | | | | Human | Environmental |
| | Non-recyclable materials from feedstock | Land - emissions arising from landfilling of final residues | Receptors in vicinity of landfill used to dispose of final residues | No significant effects likely | No significant effects likely |
| Transportation | Vehicle emissions (including: carbon monoxide, carbon dioxide, nitrogen oxides, particulate matter, metals, rubber dust, VOCs. From accidental spillages: VOCs, dust, odour, litter | Air- emissions associated with vehicle operations; emissions from accidental spillages | General public, sensitive receptors in the vicinity of transfer stations or the final reception point | Potential for exposure to exhaust fumes along transport routes and at transfer stations. | Potential for exposure to exhaust fumes along transport routes and at transfer stations. |
| | Fuel derived VOCs, (diesel and petrol); surfactants and liquid wastes from cleaning | Water- potential for contamination of groundwater and surface water arising from accidental spills of waste water and during cleaning processes | Sensitive receptors in the vicinity of transfer stations or the final reception point | Potential for contamination of groundwater used as water supply, and potential contamination and subsequent exposure to surface waters | Potential for contamination of groundwater or surface waters |

15. Appendix 6

- **Questions from HIA process and the Local Authorities community consultation workshop**

- Asthma – increases in hospital admissions? Can monitoring of admissions be carried out in relation to the expansion?)
- Is there a need for the plant?
- Will it divert resources for recycling
- What happens if waste is not incinerated?
- Is the height (of the plume?) high enough?
- Recycling issues. Raise with NCCW and in response to planning consultation. More information and re-assurance on recycling and Non-diversion of waste from recycling. Why not more recycling?
- What are the effects of incineration on wildlife?
- Kyoto? How do the proposals promote greenhouse gas emission reductions?
- Section 106/8 agreement to fund recycling initiatives?
- How are breaches dealt with?
- Has there been more burning of industrial waste?

➤ Technical questions

Has a risk assessment and scenario analysis been made available to the group by the developer? See reference - www.hse.gov.uk/risk/theory/alarp3.htm

- Is the DEFRA model generalisable to Nottingham? - Reports on Eastcroft's incinerator are based on national DEFRA modelling on the effect on the health of the population. The context for quantified health and environment risks and a review of public perception issues are explained in Chapter 6 of DEFRA's report 2004.
- Is exposure density the same in unborn population / wind conditions / x2 tonnage excess?
- What is the level of dioxin exposure, / sensitivity analysis and what are the effects on health?
- If the nature of the materials being burned changes, what are the implications for health?
- What about pollution that is not controlled? Planning assessment will go wide of the mark to consider all options. *i.e. impacts that arise during equipment failure. (is this in the remit of the planning process? – TM 27/9*
- Heavy metals and Dioxins are only monitored twice annually, whilst many other emissions are monitored continuously and reported on a monthly basis. Can all emissions be monitored continuously, particularly mercury and dioxins? The agency's independent monitoring carried out in March 2005 showed a dioxin level on Line 2, 9 times higher than the current permit level. Monitoring more regularly may mean this will not happen therefore prefer continuous monitoring for mercury and dioxins. (TM 27/9/05) Monitoring of Line 2 by Waste Recycling Group (WRG) in June 2005 and the Agency in July 2005 showed that dioxin levels had returned to compliance.
- Has a modern assessment in relation to topography been carried out?
- Has an emissions modelling been done by the applicant?
- ONS data shows high rates of birth defects in the Nottingham PCT area in 2001 and 2002. This may be linked to environmental causes including incineration (but probably not traffic as low rates of birth defects were recorded in areas with high traffic levels). Are the high figures for Nottingham City correct? If so has any analysis of possible causes has been carried out.
- The Yorkshire Post reported on 15 September that the HPA (Dr Patrick Saunders) is investigating possible links between high levels of birth defects in Sheffield and North Yorkshire with environmental pollution such as incinerators, landfill sites and agricultural chemicals. See: <http://www.yorkshiretoday.co.uk/ViewArticle2.aspx?SectionID=55&ArticleID=1190339>

Previous article, 1 September:

<http://www.yorkshiretoday.co.uk/ViewArticle2.aspx?SectionID=55&ArticleID=1132011>

This seems to be following up research, using unpublished ONS data, by Dr Dick van Steenis - see Country Doctor:

<http://www.countrydoctor.co.uk/precis/precis%20-%20Birth%20defect%20incidence.htm>

and Michael Ryan: <http://www.ukhr.org/birthdefects/pressrelease.htm>

This also claims a high rate of birth defects in Nottingham City of 36.9 per 1,000 in 2002 and 41.6 in 2001, over three times the national average, though not quite as high as Sheffield. Van Steenis and Ryan suggest that one possible cause could be incineration of radioactive waste at the Eastcroft Clinical Waste Incinerator (which has since ceased, we are told).

- What is the Model effect upon High rise buildings (Victoria Centre flats)

Outcome: The Environment Agency has modelled pollutant concentrations at 5m intervals between ground level and the top of the building for: Victoria Centre, Burrows Court, Manvers Court and a riverside high rise. Long term (annual mean) concentrations are marginally higher at the top of the buildings than at ground level (e.g. for nitrogen oxides concentrations change from 0.15 ug/m³ at the base of the Victoria Centre flats to 0.2 ug/m³ at the top of the building, compared to the air quality standard of 40 ug/m³). An increase of this magnitude as predicted by a dispersion model is unlikely to be measurable in reality. The increase in pollutant concentration between ground level and the building top is more marked when short term (1 hour) concentrations are considered. For example, the maximum hourly nitrogen oxides concentration in a year at the Victoria Centre was predicted to be 7.7 ug/m³ at ground level and 11.9 ug/m³ at the top of the building, compared to the air quality standard of 200 ug/m³. This increase is also small, and the difference between the predictions at ground level and the top of the building is within the precision of the modelling technique, i.e. less than the uncertainty associated with the ground level prediction.

1. As there is much evidence to suggest that the emissions from incinerators are much higher, if continually measured, compared to current spot monitoring, will these more realistic levels of pollution be taken into account when assessing the risks to human health?
2. As Eastcroft regularly breaches its emission levels several times a year, will these breaches, particularly for highly carcinogenic substance such as dioxins, be taken into account when assessing the risks to human health?
3. There is a genuine perception amongst the local population, that the plant seriously effects their health and wellbeing. In addition to the effects of pollution affecting their health, there are the additional risks to their health from stress and concerns. This perception also undermines the community and in turn drives people away. This is a greater problem in particularly deprived areas such as Sneinton where generally they cannot afford to move to a better area and have other significant social and health issues. Will both the real effects of toxic pollution and this perception be taken into account?
4. There are concerns that congenital abnormalities in newborn babies have been recorded as particular high in the Nottingham PCT area and these have not properly been investigated. What investigations have been carried out and when will work will be carried out to assess these statistics with any links to emissions from the incinerators?
5. We need to consider not just the effects on human health from the toxic emissions from the stack, but also from the solid and liquid waste. Around 35% of waste incinerated remains, some of this is transported to a toxic waste landfill site the rest, although less contaminated is used for land reclamation and road building. This waste is contaminated from the process with heavy metals, dioxins and PCB's. Will the risks and effects of these to toxins be assessed as they inevitable leached into the environment through watercourse and as they dry out and are blow by the wind?
6. Will the risks to human health be assessed from the additional contamination released into the watercourses and sewers from the plant be assessed?
7. Waste Recycling Group (WRG) have assessed that an additional 106 HGV movements will occur every day, 6 days a week, from within a 35 mile radius.
8. Will you take into account all pollution effects of the extra vehicles, particularly as there are areas already with an air quality issue in Nottingham, which will be on the vehicle routes?

16. Points for noting

- Consultants have created a technical map of the plume. *GLC contour plots*.
- The smaller the particle of pollution the more effect it has on the body, especially on unborn babies and very young children. (ref [REDACTED]). (this question falls outside of our remit)
- Under the WID, the incinerator is allowed to exceed the permit emission limits for short periods as a result of technically unavoidable stoppages or failures of the abatement plant. Such periods cannot exceed 4 hours at a time and the combined duration of these periods cannot exceed 60 hours in a year. (TM 27/9/05) (sensitivity analysis) [REDACTED] We will need to look at this if the incinerator exceeds this due to other breakdowns etc.
- ***Ambient air quality pollutants* monitored continuously and reported annually.***
- Need to ensure ground level concentration plots are available at future presentations
- Community concern: - One death is one death too many!
- The expansion will only produce electricity – some local electricity will be used. The option for district heating is currently open

17. Appendix 7 – Community Contributions – post Stakeholder Event

➤ Letter from [REDACTED] MIIE

Dear [REDACTED]

Unfortunately I was not able to request an invitation to attend the health impact assessment for the proposed expansion of Eastcroft incinerator on 27 September 2005. Thank you for allowing me to input into the consultative process.

I represent Nottingham Against Incineration and Landfill (NAIL). We are a pressure group formed with the intension of improving awareness of the health and environmental effects of incineration and the need to reduce waste and increase recycling. Since the announcement of the expansion of Eastcroft incinerator, we have become focussed on apposing these plans and our support base has grown substantially to over 600 local residents.

Concerns

We have several major concerns regarding this expansion, principally these are;

1. The incineration process is highly polluting releasing a cocktail of hundreds of toxic, poisonous and cancerous substances; therefore it poses a serious threat to our health and environment.
2. There are known and many unknown risks to human health as a result of the air, water and land borne pollutants created and released by the process. Research into the effects of incineration on human health is inadequate.
3. Incineration consumes the earth's valuable resources, which have to be replaced. This is unsustainable.
4. Incinerators are poorly regulated.
5. Incineration is not needed and can never play a role in any sustainable waste management policy.

1. Incinerators belch out a cocktail of toxic, poisonous and cancerous substances containing hundreds of chemical compounds including heavy metals, PCB's, dioxins, acid rain and global warming gases. You do not need to be a scientist, a doctor or a toxicologist to know that exposing people to increased levels of these poisons will inevitably increase the risk to human health. This is particularly relevant for incineration, which is not necessary in any sustainable waste management policy, exposing high numbers of people, particularly as Eastcroft is located in a densely populated area. The principle of incinerators is to spread and dilute these poisons as far and as wide as possible. Unfortunately those who are downstream, particularly close to the plant are exposed to the highest levels of pollution.

2. Research into the effects of incineration is inadequate and a lack of evidence does not proof that incineration is safe. However experimental data confirms that incinerators release toxic substances and that humans are exposed as a consequence. Studies on workers at incinerator plants and populations residing near to incinerators have identified a wide range of associated health impacts. These studies give rise to great concerns about possible health impacts from incineration even though the number of studies (particularly those that have been conducted to appropriate rigorous scientific standards) is highly limited. These should be seen, however, as strongly indicative that incinerators are potentially very damaging to human health.

In summery there is more data confirming that incineration is damaging to health than there is to suggest otherwise.

I have included a link which you can down load the following reports, theses reports by Greenpeace include information linking incinerators to many forms of diseases, cancers, other health impacts and reduced expected life span. The reports include are;

- a) Greenpeace – 'Incineration and Human Health'
<http://www.greenpeace.org.uk/MultimediaFiles/Live/FullReport/3638.pdf>
- b) Greenpeace – 'State of knowledge of Waste Incinerators on Human Health'
<http://www.cank.org.uk/GreenpeaceHealthReport401.pdf>
- c) Greenpeace – 'Pollution and Health Impacts of Waste Incinerators'
<http://www.greenpeace.org.uk/MultimediaFiles/Live/FullReport/3809.PDF>
- Greenpeace – 'Criminal damage, a review of the performance of incinerators'
<http://www.greenpeace.org.uk/MultimediaFiles/Live/FullReport/3766.PDF>
- d) The Guardian – 'Cancer Village fight for justice over incinerator'
<http://www.guardian.co.uk/international/story/0,,1485411,00.html>

If you would like hard copies of these reports, please let me know and I will post them to you.

3. The vast majority of the waste consumed by incineration and turned into toxic gases and toxic solid waste, could have otherwise been recycled, in fact in excess of 80% of household waste can be recycled. Encouraging manufactures to use more suitable materials and increase the use of recycled materials could further increase this level. Once these materials have been incinerated, we have to replace them. This involves the exploration, extraction, transport and manufacture products such as paper, cardboard, plastic, glass etc consuming huge amounts of energy and the subsequent pollution.

If we maximise recycling, we can drastically reduce our demand for raw materials, substantially reducing pollution from incineration and turning raw materials into products. We are still cutting down rain forests around the world to manufacture paper and our oil supplies are running out, yet we are proposing to incinerate more paper and plastics, amongst other waste!

The incineration industry heavily relies on self-regulation and extremely poor monitoring. Waste Recycling Group (WRG) owners of Eastcroft are responsible for writing their own environmental impact assessment, they also carry out their own monitoring. The Environment Agency (EA), who regulates the industry, relies on Eastcroft reporting any breaches in their authorised emission levels.

Of the hundreds of toxic substances released by incineration, only a handful are constantly monitored. The vast majority, including the most toxic and carcinogenic are only checked by Waste Recycling Group (WRG) twice a year and independently checked by the EA once a year. This spot sampling misses out the peaks and spikes. Research carried out in Belgium found that constant measurement of dioxins resulted in a figure 30-50 times greater than that of spot sampling.

Year after year Eastcroft regularly breaches its emission limits, there have been four breaches since March this year alone. In one breach the EA found that dioxins released into the atmosphere were 900% of the authorised levels. As dioxins are only measured twice a year by Waste Recycling Group (WRG) and annually checked by the EA, this breach could have gone undetected for months. Despite the continued breaches, Waste Recycling Group (WRG) avoids prosecution.

If we maximise recycling, less than 20 % of the waste remains which can be treated and safely landfilled. Incineration does not remove the need for landfill quite the opposite. Once incinerated, around 35% of the waste remains which becomes contaminated in the process with heavy metals, dioxins and PCB's. Some of the waste is required to be landfilled in a licensed toxic landfill site. The remainder, although still contaminated is used as hardcore for road building, land reclamation and has even been found on children's playing fields.

| | | | |
|----------------------|--|--|-----------------|
| | <ul style="list-style-type: none"> • Increased contamination of food • Don't know long term affects of this • Children in particular are vulnerable to food which is contaminated (also through breast milk) • Discouraging drive to eat healthily, organically and locally • Largest allotment site in Europe and several other allotments in vicinity | <p>monitoring to reassure community and baselines in place, dioxins, PCBs, heavy metals. This should happen already.</p> | points |
| Food Env gp 2 | <ul style="list-style-type: none"> ▪ Allotments Top of List for Dioxin Risks ▪ Have the large numbers of allotments (and food growing) in deprived areas been taken into account? ▪ The 'Choosing health' white paper encourages food growing – WHO encourage food growing in cities is this in conflict with ether dioxins? ▪ Eastcroft will contribute higher proportion of ill effects as other improvements kick in | <ul style="list-style-type: none"> ▪ Will baselines of monitoring be established on all food-growing sites in significant radius? | |
| Air Quality Env gp 1 | <ul style="list-style-type: none"> ▪ Question over technical efficiency of incinerator – we have not been given the information to make decisions e.g. “burn in a box” gasification pyrolysis what will be burnt ▪ Little change to low environmental impact ▪ Increased air pollution due to emissions from incinerator ▪ Increased air pollution due to increase in heavy vehicular traffic bringing waste from outside city ▪ Should take into account contributory effect – may not be a big problem on own but combined with other sources of pollution, health problem makes a big difference ▪ Existing/future quality acceptable ok compared to standards set by experts ▪ Air quality emissions – long term and future not addressed | | 9 |
| Local Air Quality | <ul style="list-style-type: none"> • Perceived increased respiratory disease etc • Increased traffic concerns over need to also focus on strategic solutions | <ul style="list-style-type: none"> • Mitigating actions • Environment agency – improved monitoring (of stack emissions and ground level) increased frequency • Planning application – use section 106 to improve transport management • Traffic management • Green fleet • Education programme regarding recycling | Feedback Points |

| | | | |
|-------------------------|--|--|--|
| | | <ul style="list-style-type: none"> • Raise standards of recycling across all Nottinghamshire to those who do it best • Company fund workshops regarding waste management | |
| Air Quality Env Gp 1 | <ul style="list-style-type: none"> • Assessment of fugitive emissions. • White ash – at incineration and local residents window ledges – increase anxieties. Not looked at as assumed its not happening • Breaching limits - Only tested twice a year could be breached more frequently | <p>possibility of more frequent tests should be investigated</p> <p>possibility of more frequent tests</p> | |
| Air Quality Env gp2 | <ul style="list-style-type: none"> ▪ More emissions to where? ▪ Not just a Sneinton problem air quality of the whole city is affected ▪ Actual monitoring most modelling to date based on theory ▪ Is the monitoring process transparent enough | | |

| | | | |
|------------------------------------|---|---|-----------|
| <p>Air Quality Env Gp 3</p> | <ul style="list-style-type: none"> ▪ New proposed EEC standards of particular PM10 and PM 2.5 – will be difficult to comply with ▪ Has any air quality monitoring of emissions been undertaken in Sneinton? ▪ Impact of NO2 emissions on Rushcliffe Air Quality Management area (exceeding AQS) ▪ Has H1A considered synergistic effects of emissions ▪ Does modelling consider weather and topography? ▪ Air pollution in absolute terms – low relative to other sources doesn't mean acceptable ▪ Existing Air Quality levels are high for No2 in vicinity – increased impacts | <ul style="list-style-type: none"> • Monitoring of dioxins (stack of general air quality) • Traffic management? Locally stagger hours of delivery? • Financial contribution (S106) • Green credentials of vehicles using the site • Education programme of recycling (Learn for those achieving best rates/best practice) • Best Practice on Incinerators overseas • Is the best possible technology being used? • Increased Asthma and health/respiratory • Air quality background levels high • HGVs coming to site as well as stack • What is current impact? Better assessment required • Is the proposal making it worse? • Difficulty of linking causes • Justify why development should not go ahead in terms of air quality • Ingestion – monitoring soil and food | <p>13</p> |
| <p>Air Quality Social Gp 2</p> | <ul style="list-style-type: none"> ▪ Impact on health ▪ Particulate matter ▪ Independent emission readings needed for the people, weekly monitoring without Eastcroft knowing ▪ Burning plastics tyres etc causes more emissions ▪ Contribution to increased respiratory illnesses in BME children ▪ Increase in respiratory complaints ▪ Impact on health of BME population - who already experience worse health in key areas in Sneinton | | <p>12</p> |

| | | | |
|-------------------------------|--|--|--------|
| Health Inequalities (Env Gp1) | <ul style="list-style-type: none"> ▪ Effect on sustainability of surrounding communities ▪ Night time asthma – in Lady Bay – must be worse than Sneinton. ▪ Anxieties/concerns fully addressed regarding health impacts. ▪ Sneinton already has health (particularly respiratory) /environmental/social deprivation problems, doesn't need anymore | | 7 |
| Pollution Env gp2 | <ul style="list-style-type: none"> • Disposal of Ash • Contaminated land • Ash from incinerated waste falling | | |
| Pollution Env gp 3 | <ul style="list-style-type: none"> • Soil contaminated from emissions • Emissions of dioxins and what are my children exposed to when we eat vegetables grown at local allotment • Expansion of ugly smoking site 9 i.e. visual impact) <ul style="list-style-type: none"> • Visual impact • Clothes get dirty on line • Litter and dust • Attention on incinerator affect on air quality takes attention/action away from real issue – traffic pollution • Ecology and nature conservation p- wildlife • Fate of bottom of fly ash generated? | We have heard about models of air quality? Have we modelled soil contamination? Dioxins – ingestion | 5 9 |
| Pollution Social Gp 2 | <ul style="list-style-type: none"> • Importing waste from Derbyshire, Lincolnshire, Leicestershire – • Where will the extra 30,000 tonnes of toxic ash go • More investment means its here to stay • When it rains acid gases are washed out onto local allotments | <ul style="list-style-type: none"> • people in these areas should take responsibility for own waste | |
| Traffic Env gp1 | <ul style="list-style-type: none"> ▪ Increased traffic – traffic levels high already – noise, accidents and air pollution ▪ Transport local national positive or negative | | |
| Climate Change Env gp 3 | <ul style="list-style-type: none"> • Consideration of Climate change impact CO₂ emission – energy impact • What about CO₂ SO₂ - non-toxic (?) but significant in terms of climate change • Acid rain | | |
| Traffic (env gp 1) | <ul style="list-style-type: none"> ▪ Greater number of deliveries, more ash to take away ▪ Congestion, accidents, affect built environmental noise ▪ Alternative landfill could also increase traffic ▪ Transport from a wide area outside Notts from Lincolnshire, not sustainable ▪ No alternative way of transporting in waste – e.g. rail. River canal could be an option | | |

| | | | |
|-----------------------|--|---|---|
| | <ul style="list-style-type: none"> ▪ More recycling may also mean waste brought in from a wider area ▪ <u>Air inversion</u> – trapped pollutants should be considered. ▪ Tech efficiency – burning in a box/gasification/pyrolysis | | |
| Transport Env gp 2 | <p>Waste from External Boroughs</p> <ul style="list-style-type: none"> ▪ Congestion from extra traffic and related issues (accidents and pollution and eco affects) ▪ Increased heavy traffic (lorries in from outside Nottingham) ▪ 106 extra HGV lorries ▪ Do we need to look at likely extra road deaths/accident from traffic ▪ Cost to tax payer query road impacts ▪ Road wear from extra lorries ▪ Transport system additional pressure | Have increased oil prices been factored into the equation of bringing waste in? | |
| Traffic Env Gp 3 | <ul style="list-style-type: none"> ▪ What is the cause of the increase in traffic – will impact of incinerator be in terms of traffic as much as incineration ▪ Increased Traffic - noise and vibration / road building? ▪ Types of waste that the incinerator will accept. If waste is transported from outside Nottingham there will be a wider impact on air quality via transport related emissions. ▪ Safety – road traffic / traffic accidents due to increase traffic/trucks ▪ Increased traffic – increase in road traffic accidents? ▪ Increased pollution due to extra lorries ▪ Increased HGV's will increase local impacts of NO2 | | 7 |
| Energy Env gp 1 | <ul style="list-style-type: none"> ▪ Life cycle analysis of process e.g. embedded energy ▪ Energy recovery positive financial basis ▪ Landfill of ash ▪ Process of waste management subject to strict regulation – positive | | 4 |

21. Table 3 – Economic

| Key Themes ¹⁷ | Key Issues & Consequences | Actions | Priority ¹⁸ |
|--|---|--|--------------------------|
| Jobs & Energy | Recycling is precluded by incineration and yet is the most economical in terms of energy efficiency and jobs (as in creation of jobs in recycling industry) | Address <ul style="list-style-type: none"> • Don't build the incinerator • Incentives recycling | Feedback points |
| Recycling Env Gp1 | <ul style="list-style-type: none"> ▪ Recycling is very lab. Intensive – fewer potential jobs if incinerator is extended. | | 5 |
| Food Economic gp | Allotments - Perception of own grown food on allotments because of toxins – affects local economy. | | |
| House prices falling Economic group | Some more economically active people may decide to move away from the area, house prices may drop particularly with increased lorry movements along main centres – possible implications for local shops etc | Address perceived issues with a PR campaign, real issues with action e.g. rerouting traffic so lorries are not going through residential areas/streets | Feedback points |
| House Prices Economic gp | <ul style="list-style-type: none"> ▪ Less desirable area to live ▪ If less efficient way of dealing with waste then could put property prices up nationally ▪ Will push house prices up somewhere else because people who leave will have to move somewhere else | <u>Real</u> (e.g. lorries) – new traffic routing | |
| Health Inequalities Env Gp 2 | <ul style="list-style-type: none"> ▪ Incinerator extensive will devalue the area people moving out/house prices down ▪ Reduction in house values | | |
| Health inequalities / Economic Blight Env Gp 1 | <ul style="list-style-type: none"> ▪ Economic Blight = poverty = ill health ▪ Built environment degraded leads to lack of development. ▪ There is investment and changes currently but already effecting plans for redevelopment ▪ Perception can be as important to this agenda ▪ Incinerator is costly – money saved would be used for other health preventative measured financial. | <ul style="list-style-type: none"> ▪ If wish to improve public health need neighbourhood renewal and development. <p>don't add the third line</p> | Feedback points 6 |

¹⁷ Within key themes, the name of the group that made the point was specified e.g. Social Group 1, Environment Group 3

¹⁸ Due to time constraints not all issues were allocated priority points. The most important issues and actions are identified as 'Feedback points' followed by those with the highest numbers

| | | | |
|------------------------------------|---|--|-----------------|
| | <ul style="list-style-type: none"> ▪ Schools improving – this will be effect this development ▪ Greater emissions in Sneinton – are the emissions impacting? Perception can be as powerful. ▪ City Council plans for redevelopment of south of the city | | |
| Health inequalities Env gp 3 | <ul style="list-style-type: none"> • Residents will take drastic action (e.g. moving away) in response to perceived effect when the evidence shows this is not necessary • Houses will lose their value • Reduce social cohesion – families moving out | | 5 |
| Health Inequalities Social Gp 1 | <ul style="list-style-type: none"> • House prices going down • Movement out of the area – reputation (area stigmatised) • Young people moving out leaving elderly population • Less incentive for people to move into Sneinton • Less incentive for businesses to come into Sneinton • Makes Sneinton less vibrant and more deprived? • Stop people going outside (kids playing) • Less recycling therefore encouraging more waste! • More people move out of Sneinton • Increased depression at ugliness and confinement • Increase in asthma from emissions and unknown consequences • 'Another nail in the coffin for Sneinton' • Sneinton = dumping ground – nobody cares/nobody listens • Increase in stress due to increase of fear to unknown consequences | <ul style="list-style-type: none"> • Bring in people to talk from other communities with incinerators • Have visits to incinerators • Be honest and open to say to people that we just don't know the long term affects • Cheaper rates to residents re electricity/power • Visible monitoring of what's happening • Employ local people to be researchers and collect and monitor more information • Encourage people to grow foods in allotments and schools • All new jobs to be for locals • Soil testing equipment given to people in Sneinton | Feedback points |
| Health Inequalities Social Gp 2 | <ul style="list-style-type: none"> • Movement out of area of residents • Morale • Effect on length of time residents live in area • Effect on social capital • Desirability of area as a place to live • Effect on community cohesion | | 7 |
| Inclusion Social Gp 2 | <ul style="list-style-type: none"> • Involvement of communicating this process to BME population – positive ?? • Involvement/information to all countries translation | | 1 |
| Pollution | Cost of getting rid of ash – where will this go and who will pay for it. | | |

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|---------------------------------|---|--|---|
| Economic Gp | | | |
| Energy Economic Gp | Squanders energy when energy is becoming scarce and therefore is wealth reducing (by reducing recycling of waste)=health reducing over next 30/40 years. | | |
| District Heating Economic Gp | Expanded Incinerator will generate more heat and electrical energy for the District Heating Scheme although this needs to be offset against the energy saved by recycling the waste possibly as much as four times. However, there is already spare capacity in the District Heating Scheme. | | |
| Traffic Env gp 3 | Attention on incinerators effect on air quality takes attention/action away from real issue – traffic pollution | | 5 |
| Jobs Economic Gp | <ul style="list-style-type: none"> ▪ Incineration provides fewer jobs than e.g. community recycling ▪ Recycling waste generates more employment than incineration of waste – have the alternatives been studied against each other? (Employment is a need in deprived areas). ▪ Impact on local businesses and shops (people moving away) ▪ It will generate more jobs in the local area ▪ More jobs in recycling than in incineration | | |
| Development Env Gp 1 | <ul style="list-style-type: none"> ▪ Economic/built environmental impact on South Nottingham ▪ Development of riverside – very promising mixed development - developers are not happy about presence/expansion of incinerator | | 6 |
| Development Env Gp 3 | Developers won't want to move in – area won't get regenerated | | 5 |