

REVIEW OF RESIDUAL WASTE TREATMENT OPTIONS BY THE WASTE REVIEW TASK GROUP

RESPONSE BY GAIN

(GUILDFORD ANTI INCINERATOR NETWORK)

GAIN welcomes the opportunity to contribute to this review and thanks the Task Group for their invitation.

BACKGROUND - RESIDUAL WASTE AND REVIEW OF BASE DATA

In order to comment on your papers concerning treatment technologies we believe we must also address the wider aspects of dealing with waste arisings.

GAIN believes we need to treat residual waste:-

- in an appropriately sustainable, environmentally sensitive and safe manner
- in line with EU and UK government targets
- recognising the financial interest of residents

In respect of targets the **EU Landfill Directive** requires us:-

- by 2010 to reduce **biodegradable** municipal waste land-filled to 75% of that produced in 1995
- by 2013 to reduce **biodegradable** municipal waste land-filled to 50% of that produced in 1995
- by 2020 to reduce **biodegradable** municipal waste land-filled to 35% of that produced in 1995

In common with other authorities Surrey has been allocated targets in line with the above.

GAIN believes 'dirty' landfill is damaging and unacceptable. It is very apparent that the wider public understands the need to clean up landfill and wishes to engage with local authorities to help solve our problems.

Encouragingly, the 'Waste Strategy Annual Progress Report for 2008/9', (published by Defra in Oct 2009), reports that England has already met the 2010 target – it obviously gets harder in later years.

Putting municipal solid waste, (MSW), in landfills also attracts financial penalties. This waste is regarded as 'active' due to the high level of biodegradables and toxic items such as batteries. The **Landfill Tax escalator** has seen the cost of landfilling 'active' waste rise by £8 per tonne each year. For 2009/10 it is £40 per tonne and in April 2009 the Chancellor announced that the rises would continue until 2013.

Surrey has set the following targets for recycling/composting:-

<ul style="list-style-type: none">• 2010 40%• 2015 50%• 2020 55%• 2025 60%	<p>2007/08</p> <p>ACHIEVEMENT 35.1%</p> <p>TARGET 37%</p>
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These targets are more ambitious than those set for England in Waste Strategy 2007 but still lack ambition.

GAIN continues to promote kerbside collection of separated recyclables with arrangements that make it simple and straightforward for residents. This gives them confidence in the system, avoids contamination of valuable resource and ensures that our recycle achieves the best market price. **(see Annex 1)**

GAIN thinking is in line with the latest EU **Waste Framework Directive (WFD)**, which must be transposed into UK law by December 12th 2010.

Key messages in the WFD are:-

- The '**first objective of any waste policy should be to minimise the negative effects of the generation and management of waste on human health and the environment**'.
- the EU should become a 'recycling society' and should avoid landfilling and incinerating recyclates
- the separate collection of bio-waste is strongly supported, (a separate directive is under consideration).
- the whole life-cycle of products and materials should inform our thinking on waste management

- costs should reflect the real costs to the environment
- the need to conserve natural resources is recognised

In the light of the above we hope that the Task Group will consider reviewing the base data upon which good decision-making rests. In particular we note that nationally and locally waste arisings are no longer growing inexorably. We hope that the recent more proactive approach by government and local authorities to the prevention of waste should also begin to bear fruit.

We understand the difficulties inherent in forecasting a fast changing waste scene – one of the reasons we advocate using flexible, smaller scale, modular treatment facilities. A recent report for Defra sets out the many difficulties in modelling and forecasting, (Oct 09 WR1204 Brook Lyndhurst).

However we hope that the following information will be made available to the Group:-

- Updated forecasts of waste arisings – tonnages
- Updated forecasts of dry recycling - tonnages
- Anticipated food waste tonnages diverted from landfill by kerbside collection
- Other waste that will be composted – tonnages

And specifically relating to our landfill reduction targets:-

- Total tonnage of municipal waste anticipated
- Total tonnage of Biodegradable Municipal Waste (BMW) anticipated
- Total tonnage of BMW recycled/composted anticipated
- Target BMW landfill

It would also help members to have the most up-to-date information relating to the future availability of void space in the County.

BIODEGRADABLES AND LANDFILL

GAIN fully supports kerbside food waste collections and hopes that all Boroughs and Districts will soon be participating in these schemes. We believe that removing large quantities of food waste from the waste stream alters the dynamics of waste 'disposal' in the county. This step-change confirms our long held view that biological treatment of waste will allow Surrey to make major reductions in total landfill and meet Landfill Directive targets relating to biodegradables.

It is assumed by the Landfill Allowance Trading Scheme, (LATS) that 68% of municipal solid waste is biodegradable, (the Environment Agency may review this). We hope that, in due course, we will be able to prove that, in Surrey, our biodegradables have been reduced to 50%, then 30% etc – we then have

A WIN WIN SITUATION

- We successfully reduce the environmental damage caused by putrescibles
- We meet our Landfill Directive targets
- We reduce the overall tonnage landfilled
- We will be treating food waste in an appropriately sustainable way and gaining energy and clean compost
- We will be in line with EU thinking – a biowaste directive is under consideration

We do, of course, have to pay for the cost of collecting and treating the waste.

If food waste collections are successful and other nasties, such as batteries, are largely removed the residual waste stream will not be inert but could, perhaps, be described as semi-inert or semi-stabilised.

The Task Group should consider what scale of 'back end' treatment facilities this residual waste might require.

GAIN continues to totally oppose incineration for the reasons set out later in this paper.

Our preferred option has always been a version of Mechanical Biological Treatment (MBT), incorporating biological treatment to mop up putrescibles.

We also maintain our opposition to 'dirty' landfill as currently practised in Surrey. However, it is possible that a drastically reduced biodegradable element in residuals could make landfilling, with effective gas capture, an environmentally sustainable option depending on the tonnages involved.

ANAEROBIC DIGESTION – AD

The paper submitted to the Task Group is helpful. GAIN has always believed that it is vital that we understand the composition of waste in order that we deal with it effectively and sustainably. In the case of biodegradable 'wet' waste AD technology is valuable in two contexts.

Firstly, it can be used as a primary treatment for source separated food waste; such as we are now collecting. (currently going to an AD plant in Bedfordshire or an In Vessel Composting (IVC) plant in Kent). Such treatment will produce high quality digestate.

Secondly, it can be used to deal with the biodegradable portion of residual waste in an MBT type system. Although the digestate produced from such waste is of lesser quality than that from source separated waste it has a number of useful applications.

The government is now very supportive of AD, amongst several useful papers are; Feb 2009 'Anaerobic Digestion – Shared Goals' and July 2009 'Developing an Implementation Plan for Anaerobic Digestion.

Importantly, in September 2009 WRAP produced a '**Quality Protocol for Anaerobic digestate**' defining '**End of waste criteria for the production and use of quality outputs from anaerobic digestion of source-segregated biodegradable waste**'. This represents a major step forward because it establishes certainty for industry and in the market place, something that was previously lacking and holding back progress.

Also in September, a new website was introduced:- 'England's Official Information Portal on Anaerobic Digestion', at www.biogas-info.co.uk. This succinctly describes AD:-

'Anaerobic Digestion (AD) is the process where plant and animal material (biomass) is converted into useful products by micro-organisms in the absence of air. Biomass is put inside sealed tanks and naturally occurring micro-organisms digest it, releasing methane that can be used to provide heat and power. This means AD can help reduce fossil fuel use and reduce greenhouse gas emissions. The material left over at the end of the process is rich in nutrients so it can be used as fertiliser.

AD is not a new technology - it has actually been used in the UK since the 1800s - and there are a growing number of AD plants in the UK processing our waste and producing energy.

Almost any biomass can be processed in AD; food waste, energy crops, slurry, crop residues, etc. AD can accept waste from our homes, supermarkets, industry and farms, meaning less waste goes to landfill. However, woody biomass cannot be used in AD because the micro-organisms can't breakdown the lignin, the compound that gives wood its strength'.

Annex 2 reproduces a diagram from the [biogas-info](http://www.biogas-info.co.uk) website illustrating the AD process.

Under 'Who can Benefit from Anaerobic Digestion?' the environmental benefits are listed as:-

- Reduces emissions of methane, a potent greenhouse gas
- Produces renewable energy
- Reduces the amount of biodegradable waste sent to landfill
- Produces fertiliser, reducing the demand for petrochemical-derived fertilisers
- Can reduce nitrate pollution by decreasing run-off

INCINERATION – WHY IT IS THE WRONG TREATMENT TECHNOLOGY

BEST AVAILABLE TECHNOLOGY

Incineration is certainly not Best Available Technology for food waste and green waste, which could be providing energy, heat and compost using techniques such as In-vessel composting and anaerobic digestion. These technologies are supported by Government and by the SE Region but are yet to be properly promoted in Surrey.

Residents have previously indicated a preference for smaller treatment facilities, sited more locally to communities. Facilities that are modular offer the flexibility to cope with future changing needs and should also be financially and environmentally advantageous.

The waste mix will change over time. As bio-waste collection increases more of the energy produced by incinerators will be derived from fossil fuel sources such as plastics. However, an endless supply of plastic and oil-based products cannot be relied upon. More and more plastic is being collected and there is a world market for this material. Problems in dealing with collected 'mixed' plastics are being addressed and

WRAP, (Waste and Resources Action Programme), is supporting developments. There is discussion about whether we have reached 'peak oil' production, but it is likely that we will need to husband these resources in the future. Given that plastics have a high calorific value and produce particularly high levels of CO₂ when burnt they are a major contributor to the environmental degradation/climate change caused by an incinerator

The abatement and monitoring equipment, which under the WID Waste Incineration Directive, has to be installed in an incinerator to mitigate emissions, forms a significant part of the capital cost. The decision to opt for an incinerator, with a life of 25 plus years, is not only environmentally unsound but may also prove a long-term financial burden to council taxpayers.

CROWDING OUT RECYCLING

The Surrey Waste Plan proposes there should be a test so that incineration is an **option of last resort** for waste, (Policy WD5).

We believe that the argument that incineration will not crowd out recycling is fallacious. There is only so much waste to go round. We believe this is demonstrated by the figures from Hampshire where there has been little improvement in recycling and composting rates are poor. This is an unacceptable waste of resources.

DEFRA FIGURES FOR 2007/08

Authority	Dry Recycling BVPI 82a	Green Recycling/Composting BVPI 82b	82a+82b	Incineration BVPI 82c
Hants CC (WDA)	27.11	12.73	39.84	47.73
Southampton (Unitary)	19.28	7.86	27.13	50.34
Portsmouth (Unitary)	20.48	4.0	24.48	64.54
Surrey	23.25	11.81	35.06	0.84

Further evidence comes from Denmark

Regional data for household waste from Denmark in 2005 clearly shows that regions with high incineration have lower recycling and *vice versa*:

Region	Recycling	Incineration	Landfill
Hovedstaden	21%	77%	2%
Nordjylland	29%	63%	8%
Sjælland	31%	59%	10%
Midtjylland	40%	53%	7%
Syddanmark	41%	52%	6%

Danish figures from Waste Center 2005 – data for household waste

It is less often mentioned that Austria, with quite low levels of incineration, has one of the highest recycling levels in Europe, preferring composting to burning.

CLIMATE CHANGE

As well as being an inefficient way to produce energy, burning waste contributes to climate change on two fronts – producing high CO₂ emissions while in operation and causing the depletion of natural resources, particularly those that are oil based and desirable to the incineration industry because of their high calorific value.

Research by Eunomia, carried out for the FOE report '**A changing climate for Energy from Waste**', (2006), shows:

"that an electricity-only waste incinerator emits 33% more fossil fuel derived CO₂ than an gas fired power station"

"The same research also undertook a more sophisticated comparison of the impact of all CO₂ emissions from incineration when compared with other residual waste treatment methods. This analysis concluded

that pre-treatment of residual waste to remove recyclables and degrade biodegradable materials, followed by landfill of the end material, was better for the climate than incineration, with or without recovery of heat. It is therefore clear that incineration is not the best way to divert biodegradable waste from landfill”.

EMISSIONS, HEALTH EFFECTS AND DAMAGE TO SENSITIVE HABITATS

There remain concerns about emissions. Although the pollution control equipment is better in modern incinerators, (they have to comply with the EU Waste Incineration Directive and obtain a permit from the Environment Agency), damaging substances are still emitted including dioxins and particulates. The operator is obliged to monitor certain emissions but not at all times and under all conditions; some emissions are only monitored periodically or not at all.

Surrey has relied upon the 2004 Defra report which states that *'Adverse health effects have been observed in populations living around older, more polluting incinerators'*, but does not find evidence of newer incinerators causing damage to health. However, it is clear, also from this report, and its peer review, that there is not yet adequate data from which to draw firm conclusions on the safety of the newer generation of incinerators.

A very recent report (Oct 09) produced for The Scottish Environment Protection Agency (SEPA) also concludes that evidence is lacking, *'The majority of research work in this field is of historical relevance but tells us little about the current risk'*. Furthermore it states, *'Based on the limitations of available research literature, attempting to provide an overall conclusion on the health effects of incineration in total is particularly difficult.'*

The report indicates concern about increasing the emissions load, *'when new incinerators are planned and where there are sensitive receptors, there will remain a need to take account of background ambient air quality especially in localities with other sources of similar emissions (including road traffic and other industrial sources)'*.

Following on from this last point, it is recognised that the production of nitrous oxides by incinerators damages sensitive EU protected wildlife habitats. We note that there have been problems with sulphur dioxides at SITA's Isle of Man incinerator; this can damage human health, trees and crops.

Air quality for humans in Surrey is already poor as a result of high levels of road traffic on congested roads such as the M25, M3 and A3 plus the pollution from two major international airports. Were an incinerator to be built at Trumps Farm it would be only a relatively short distance from the Colnbrook plant and its emissions.

It cannot be acceptable that a bit more will not matter because we already suffer pollution.

This quote from the SEPA report indicates why we should invoke the precautionary principle, ***'the absence of evidence does not equate to evidence of absence'***

PROVEN TECHNOLOGY

We are aware of a number of recent events that contradict this assertion.

Kirklees incinerator - SITA

In September 2006 there was a serious breakdown at this incinerator. Claims that there was an explosion at the incinerator have been denied but SITA confirmed to the media that the boiler walls had overheated and that significant damage had been caused to the boiler wall tubes, which had buckled. SITA also stated that boiler tube problems were not uncommon.

Isle of Man incinerator – SITA

Problems were found with the steam turbine at this plant and this and its rotor had to be returned to Germany for repair – no electricity was produced for four months. (Sita Isle of Man Annual Report for 2007)

In the same report SITA congratulate themselves on a 'sharp reduction' in emission incidents. Nevertheless, elsewhere in the report twenty incidents are detailed. Ten of these incidents relate to Sulphur Dioxide and Hydrogen Chloride emissions. Exposure to Sulphur Dioxide can cause respiratory and breathing problems; with people suffering from asthma, chronic lung or heart disease being particularly sensitive.

Under the heading, 'Various emissions', five incidents are recorded. The information given indicates a catalogue of apparently small problems which are indicative, not only of our justified concern with the

technology, but also shows how complex it is and how prone to failure. This report confirms that most exceedances occur at start-up and shutdown.

There was a fire at the incinerator in November 2007, reported to have been caused by the failure of an hydraulic ram.

Subsequent to the 2007 report there have been further problems with the turbine and electricity generation with questions being asked in the Tynwald.

The **Colnbrook/Lakeside**, incinerator, (Grundon/Viridor, 410,000 tonnes - opposite Terminal 5 at Heathrow), should have opened in 2008 but was delayed because of technical problems and is not yet operational.

The **Allington** incinerator (WRG 500,000 tonnes), suffered delays because faulty furnace linings had to be replaced.

PROBLEMS WITH ASH

IBA – Incinerator Bottom Ash

Although incinerator bottom ash attracts the 'inert' tax rate when landfilled, (the most usual option), there have been concerns about the presence of heavy metals, dioxins and furans. In particular, we understand that the Environment Agency is looking at raised levels of zinc in this material.

APC (Air Pollution Control) residues (Fly Ash)

Fly ash is collected in the stack by filtering and is much finer than bottom ash. It has to be handled as hazardous waste and contains heavy metals, dioxins and furans, along with PAHs (polychlorinated aromatic hydrocarbons).

The incineration process deliberately creates a toxic substance which is difficult, and expensive, to deal with.

People in Gloucestershire have great concerns about this material being stored in one of the few hazardous waste sites in the country.

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If you have any queries about this document, or need further information, technical references etc Please contact Mrs Elizabeth Finnis - elandal@ukgateway.net or 01 483 562020

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