



# *Myths of the incineration industry*

October 2001

## Great myths of the incineration industry

### Emissions from modern incinerators pose no health risk

Anyone who says modern incinerators are safe is either misinformed or lying. Everyone knows the chemicals created and released during incineration process are dangerous. *No one knows if the volumes discharged – even from the most modern incinerators – are safe.*

The Environment Agency has conceded that it is "generally accepted that emissions standards are based on what can be measured and what is technically achievable, rather than what is safe" and that "the health effects which result from an incinerator's emissions are not yet fully known".<sup>i</sup>

Environment Minister Michael Meacher admitted in June 1999 that "emissions from incinerator processes are extremely toxic. Some emissions are carcinogenic... We must use every reasonable instrument to eliminate them altogether".

### The incineration industry is the most tightly regulated and monitored industry in the UK

This is a complete red herring. The regulations are meaningless and the monitoring is a joke. The regulations, as noted above, are based on what is technically feasible rather than what is safe. There is little to no monitoring of some of the most toxic substances created by incineration. Dioxin monitoring occurs no more than twice a year. Incinerator operators regularly break their legal limits with impunity.

A report released by Greenpeace this year<sup>ii</sup>, based on the Environment Agency's own records of emissions breaches reported by incinerator operators, revealed that England's 10 operating incinerators had exceeded their 1999 and 2000 pollution limits 553 times. Only one Environment Agency prosecution resulted. The report reached the inevitable conclusion that *incineration is an unreliable and dangerous technology incapable of being regulated with proper regard to human health and the environment.*

### There are more dioxins released during bonfire night than incinerators release in a year

This is the incineration industry's favourite response to accusations that it is unnecessarily polluting the population with dioxin, the most toxic manmade chemical ever identified.

There is some limited evidence to suggest that dioxin levels in the atmosphere do rise after bonfire night. This appears to be caused by both the fireworks and the bonfires. Fireworks contain PVC, combustion of which creates and releases dioxins, and the average bonfire often contains plastic, waste motor oil, and treated timber, to name but a few of the dubious items people chuck in to the mix. Combustion of all these materials can lead to dioxin formation.

Bonfires may indeed be a significant source of dioxin to atmosphere. This simply illustrates the pollution problems created when mixed materials are burned, as they are in incinerators. The most recent study of dioxin emissions in the UK concludes that, of all

industrial sources of dioxins, municipal waste incinerators contribute between a third and a half of the total.<sup>iii</sup>

In making claims about bonfires, the industry ignores the fact that *no one really knows how much dioxin is discharged into the environment every year by incinerators*, as dioxin measurements are only taken twice a year. A Belgian study shows that dioxin levels, if continuously monitored, may very well be 30–50 times higher than the figure extrapolated from semi-annual monitoring. Whatever the real total is, the fact remains that incinerators are highly polluting and no attempt to divert attention to bonfires, barbecues or bush fires will change that.

### **The UK cannot meet EU landfill targets without increasing incineration**

Landfilling of municipal waste has to be reduced for a variety of reasons, foremost among them is the European Union Landfill Directive. Some local authorities claim incineration is necessary to meet the UK's commitments under the Directive. This position is untenable. In order to meet the landfill directive targets the UK need do no more than recycle or compost 30% of household newspaper, card and organic waste by 2010. This target and the targets for 2013 and 2020, can easily be met and exceeded with technology currently available and in use in other parts of the world. Cities and regions around the world have already achieved much more than this.

Incineration does not make rubbish magically disappear, it simply turns rubbish into something else. *If you put 100 tonnes of rubbish into an incinerator you get many tonnes of dangerous air pollution and 30 tonnes of contaminated ash.* There are two types of ash. The largest amount is 'bottom' ash, the solid residual of the combustion process. Depending on what has been burned, this ash can be contaminated with heavy metals and other pollutants. The other type of ash is 'fly' ash, the highly toxic particles captured in the pollution controls of the incinerator's chimney. The greatest reduction in mass that an incinerator can achieve is 70%, having turned the bulk of the rubbish into air pollution.

Currently operating, state-of-the-art screening and composting systems are already achieving 70% or more reduction in the mass of waste in Canadian and Australian cities. At the same time as they are eliminating the pollution problems associated with incinerators, they are providing a useful, sometimes marketable, product. These technologies could easily be used here.

### **Incineration is more environmentally friendly than landfilling**

*Burning and burying are not the only options for waste materials*, most of which can be reused or recycled. One of the biggest environmental problems posed by landfills is the leaching of decomposing organic material. If kitchen and garden waste were dealt with by composting, this problem would be largely resolved. If, in addition, all other reusable and recyclable materials such as paper, metal, glass and textiles were collected separately, the volume of waste in most communities would have been reduced by over 70%.

There is nothing environmentally friendly about incineration. Even a supposedly state-of-the-art incinerator,<sup>iv</sup> discharges a hazardous cocktail of dioxin, greenhouse

gases, dust and other pollutants. After the rubbish is burned, a minimum of 30% of what goes in remains as bottom and highly toxic fly ash. Incinerator operators claim – despite unresolved concerns about the safety of this practice – that bottom ash can be "recycled" in road and building materials. It should not be put to this use. Fly ash from the filter systems which capture some pollutants (and comprises more than 10% of total ash) must legally be disposed of in secure hazardous waste landfill sites.

A number of efforts have been made to quantify the environmental costs and benefits of various waste disposal options. According to figures published by the Government,<sup>v</sup> incineration with energy recovery is bad for the environment, having an estimated environmental cost of £10 per tonne. This compares to an environmental cost of £3 per tonne for landfill. *Recycling, on the other hand, provides an overall environmental benefit of £161 per tonne.*

### **Creating energy from waste is good for the environment because it saves fossil fuels and reduces greenhouse gas emissions**

A large number of the chemicals released through incinerator chimneys *are* greenhouse gases. The plastics they burn are made from fossil fuels. Also, for things like paper, card and textiles, it takes considerably more energy to manufacture the product from scratch than it takes to recycle it. This, combined with the incinerator's contribution to greenhouse gas emissions is a substantial net loss to the environment. Other materials like metals and glass have no calorific value. Incineration is a very inefficient and polluting way of generating energy.

A certain amount of energy from waste could be captured using naturally occurring methane from community composting facilities based on anaerobic digestion. For the sake of the planet, the rest of our energy needs should be met by truly renewable sources: solar, wind and wave power, for example.

*Heat is a by-product of all combustion-based industrial processes. It should be standard industrial practice to capture and utilise this waste heat and energy. There is, however, nothing "green" about doing this.*

### **Incineration and recycling can work together**

Cities in the UK that have incinerators often have some of the lowest recycling rates in the country. In order to maximise profits, incinerator operators must have a large and constant supply of rubbish to burn. Many local authorities are attracted to the idea of an incinerator because it means they do not have to change anything. Rubbish can still be collected in the same vehicle by the same workforce and can still be delivered to one location. A polluting technology is being embraced, not because it makes sense from a health or environmental perspective, but because it is easy.

In some cases, local authorities have an ownership interest in an incinerator. In others, they are bound by contracts to supply guaranteed tonnages of waste. In all cases, an incinerator provides an easy option when recycling becomes a little more challenging. In these ways incinerators minimise the incentive to recycle and compost. *The capital investment is a structural barrier to doing this, providing a financial imperative to make*

*sure that recycling and composting never reach levels where there is not enough rubbish to incinerate.*

An all party Environment Committee, after studying evidence presented by the incineration industry, the government, waste professionals, academics and environmental groups, concluded that large incinerators are "inimical to the prospects for recycling and composting".<sup>vi</sup>

### **Recycling creates more pollution than incineration due to re-manufacturing and increased lorry movements for delivery**

*There is absolutely no doubt that in almost every instance recycling causes less pollution, saves more energy and more resources than incineration.* Environment Minister Michael Meacher has said "the best practicable environmental option in the vast majority of cases is recycling".<sup>vii</sup>

Only a very poorly designed waste strategy would result in increased pollution from lorries. In a well designed recycling/waste reduction scheme, the same number of vehicles should be making the same number of collections. Shipment of collected materials to recycling plants need not involve lorries at all.

### **Gasification and pyrolysis are not incineration**

An incinerator by any other name will still pollute. Gasification and pyrolysis<sup>viii</sup> are unproven technologies that are liable to have many of the same problems as a conventional incinerator, including the production of hazardous pollutants from thermal and chemical reactions, and the discharge of these pollutants in ash and air emissions. Neither gasification nor pyrolysis are solutions to the fundamentally dirty and flawed practice of mixing municipal waste and then trying to dispose of it.

Separation of municipal waste at source is the only way to significantly reduce releases of hazardous substances to the environment. Source separation will also end the unacceptable waste of resources represented by incineration. *To all intents and purposes gasification and pyrolysis are no different from incineration.* Recovery of energy from the process is a misguided attempt to present incineration as a "green" option.

Current suggestion by the Department of Trade and Industry<sup>ix</sup> that energy produced from burning organic waste in gasification or pyrolysis plants should count as a contribution to the Government's Renewables Obligation, will only prolong an unnecessary debate. Separated organic waste is much more valuable for composting.

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<sup>i</sup> Department of Environment, Transport and Regional Affairs Committee, March 2001, report HC 39-1, *Delivering Sustainable Waste Management*.

<sup>ii</sup> *Criminal Damage: A Review of Compliance by English Municipal Waste Incinerators with Legal Pollution Standards for 1999 and 2000*. Greenpeace UK, May 2001.

<sup>iii</sup> Alcock et al, 1998, *Organohalogen Compounds Vol 36*, "An updated UK PCDD/F atmospheric inventory based on recent emissions measurements programme":

<sup>iv</sup> The most modern incinerator in the UK, the 420,000 tonne capacity South East London Combined Heat and Power (SELCHP), in the year 2000 discharged over 300,000 tonnes of carbon dioxide, over 550 tonnes of nitrogen oxides, 22 tonnes of hydrogen chloride, and 19 tonnes of carbon monoxide. After burning all this rubbish and emitting all these pollutants, over 126,000 tonnes of ash remained, requiring disposal. (Source: Environment Agency)

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<sup>v</sup> Department of Environment, Transport and Regional Affairs, *Waste Strategy 2000:England and Wales (Part 2)*, May 2000

<sup>vi</sup> Environment, Transport and Regional Affairs Committee, *Delivering Sustainable Waste Management*

<sup>vii</sup> Evidence before the Environment, Transport and Regional Affairs Committee on 12 December 2000

<sup>viii</sup> Gasification involves heating waste in the presence of air or steam to produce fuel-rich gases. Pyrolysis involves heating waste in the absence of air to produce a mixture of gaseous and liquid fuels and a solid, inert residue. (Source: *Waste Strategy 2000 Part 2*, May 2000)

<sup>ix</sup> Department of Trade and Industry Renewables Obligation Statutory Consultation, *New & Renewable Energy: Prospects for the 21st Century*, August 2001.