



## DEBATE PACK

Number CDP 2020/0029, 6 February 2020

# Waste incineration facilities

A debate will be held in Westminster Hall at 9.30am on Tuesday 11 February 2020 on the incineration of industrial and commercial waste. The debate will be opened by Sharon Hodgson MP.

By Louise Smith  
Nikki Sutherland

## Contents

<b>1. Incineration of industrial and commercial waste</b>	<b>2</b>
1.1 Statistics on incineration	2
1.2 Regulation of incineration	3
EU permitting regime	3
1.3 Incineration and the waste hierarchy	5
1.4 Incineration policy	6
1.5 Opposition to incineration	7
1.6 Carbon emissions from incineration	8
1.7 Public Health England: air quality and health	9
1.8 Incineration and the circular economy	10
<b>2. News items</b>	<b>12</b>
<b>3. Press releases</b>	<b>13</b>
<b>6. Parliamentary material</b>	<b>24</b>
Debate	24
PQs	24

The House of Commons Library prepares a briefing in hard copy and/or online for most non-legislative debates in the Chamber and Westminster Hall other than half-hour debates. Debate Packs are produced quickly after the announcement of parliamentary business. They are intended to provide a summary or overview of the issue being debated and identify relevant briefings and useful documents, including press and parliamentary material. More detailed briefing can be prepared for Members on request to the Library.

# 1. Incineration of industrial and commercial waste

## Summary

The process of incineration of waste creates a number of emissions. As such, regulation of waste incineration is currently controlled by EU legislation, principally the *Industrial Emissions Directive 2010*. Under this legislation incinerators must operate under a permit regime based on Best Available Techniques.

In England, these permitting requirements are implemented by the [Environmental Permitting \(England and Wales Regulations\) 2016](#), as amended. An environmental permit will set conditions which limit the discharge to air, water and soil of specified substances.

EU legislation also provides for a “waste hierarchy”. It gives top priority to preventing waste in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery, and last of all disposal (e.g. landfill and incineration where there is no energy recovery).

In its December 2018 Resources and Waste Strategy the then UK Government said that “Incineration currently plays a significant role in waste management in the UK, and the Government expects this to continue.” The strategy also indicated that the Government may consider a tax on incineration, should other policies to incentivise recycling not deliver the required results. The forthcoming *Environment Bill 2019-20* announced in the December 2019 Queen’s Speech is expected to include measures that aim to minimise waste and promote resource efficiency.

Incineration can be a controversial form of waste management. Proposals for new incineration facilities often face strong public opposition. Many environmental groups oppose incineration and there are also specific campaign groups, including [UKWIN](#) (UK Without Incineration Network). For example, UKWIN argues that, among other things, incineration is a barrier to a circular economy – preventing resources from being reused, depresses recycling, is a nuisance and gives rise to air pollution concerns.

There has been concern about the impact of air pollution from waste incinerators on human health, particularly in respect of Particulate Matter (PM). Following a recent major study on modern municipal waste incinerators (MWIs), Public Health England (PHE) has said “PHE’s risk assessment remains that modern, well run and regulated municipal waste incinerators are not a significant risk to public health. While it is not possible to rule out adverse health effects from these incinerators completely, any potential effect for people living close by is likely to be very small.”

## 1.1 Statistics on incineration

The following tables look at recent data on incineration with and without energy. This covers all sources of waste. The proportion of waste incinerated increased from 3.2% in 2010 to 6.1% in 2016. The majority of incineration in 2016 was with energy recovery.

Incineration in the UK: Use and capacity												
	Incineration only				With energy recovery				Total			
	Million tonnes	% of all waste	Number of facilities	Capacity (Mt/yr)	Million tonnes	% of all waste	Number of facilities	Capacity (Mt/yr)	Million tonnes	% of all waste	Number of facilities	Capacity (Mt/yr)
2010	5.7	2.8%	..	..	0.8	0.4%	..	..	6.5	3.2%	..	..
2012	5.9	3.1%	87	8.4	1.6	0.8%	27	2.9	7.5	3.9%	114	11.3
2014	7.6	3.7%	83	9.9	1.9	0.9%	29	4.9	9.5	4.6%	112	14.7
2016	5.7	2.7%	78	8.5	7.3	3.4%	37	9.8	13.0	6.1%	115	18.3

Source: [UK Statistics on Waste 2019, Defra](#)

In 2016 the commercial and industrial sectors produced 41.1 million tonnes of waste; **18% of all waste produced in the UK**.<sup>1</sup> There is no published breakdown of how waste from these sectors is treated.

Incineration rates for *municipal waste* (collected by local authorities) are much higher than the 6.1% overall level (in the earlier table). In 2018-19 **43.8%** of municipal waste collected in England was incinerated, or 11.2 million tonnes. Incineration in England has increased rapidly from just over 12% a decade earlier. In 2018-19 incineration overtook recycling/composting as the largest single municipal waste management method. Within England incineration rates varied from below 30% in the South East to almost 60% in London.<sup>2</sup>

In 2018-19 **25.1%** of municipal waste in Wales was incinerated, or 0.4 million tonnes. In both England and Wales almost all incineration was with energy recovery.<sup>3</sup>

In 2018 **10.0%** of household waste in Scotland was incinerated, or 0.2 million tonnes. The minority was with energy recovery.<sup>4</sup>

## 1.2 Regulation of incineration

### EU permitting regime

Waste policy and regulation is currently driven by EU legislation.

The key EU legislation is the [Industrial Emissions Directive 2010](#) (2010/75/EU) (the "IED"), which repealed and replaced (amongst other legislation) the Waste Incineration Directive 2000, from January 2014.

The IED aims to prevent or reduce emissions to air, land and water from industrial installations. It requires installations within its scope to operate under a permit based on the use of Best Available Techniques (BAT). An EU level process establishes permit standards in BAT reference

<sup>1</sup> [UK Statistics on Waste 2019, Defra](#)

<sup>2</sup> [Local authority collected waste: annual results tables](#), Defra

<sup>3</sup> [Local authority municipal waste management](#), Welsh Government

<sup>4</sup> [Household waste discover data tool, SEPA](#)

documents and BAT conclusions. The aim of the BAT documents are to provide national authorities with a sound technical basis to set permit conditions for industrial installations.<sup>5</sup>

The EU's BAT conclusions for waste incineration were recently updated in November 2019.<sup>6</sup> These BAT conclusions aim to reduce emissions including noise and odour. Other environmental issues such as energy efficiency, resource efficiency (water and reagents consumption, recovery of useful materials), are also covered.<sup>7</sup> Within four years of this update all permit conditions of EU incineration plants will be reconsidered and, if necessary, updated to ensure compliance with the new requirements.<sup>8</sup>

## UK regulation

The principal regulations implementing the EU permitting requirements in England and Wales are the [Environmental Permitting \(England and Wales Regulations\) 2016](#), as amended. Regulation of incinerators in England is split between the Environment Agency (EA) and local authorities. The EA regulates incinerators with a capacity of greater than 3 tonnes per hour for non-hazardous waste and 10 tonnes per day for hazardous waste. Incinerators below this size are regulated by local authorities.<sup>9</sup>

There is [Environmental Permitting guidance for waste incineration](#) published on Gov.uk which provides more detailed information. The environmental permit will set conditions which limit the discharge to air, water and soil of specified substances. Further information is set out in the Environment Agency's [How to comply with your environmental permit Additional guidance for: The Incineration of Waste](#) (EPR 5.01), February 2009.

Different versions of environmental permitting regimes also exist in [Scotland](#), [Wales](#) and [Northern Ireland](#).

A PQ response from 2017 summarises how the effects of incineration are monitored within the permitting regime:

As part of the environmental permitting process for new incinerator plants, the regulator is required to make an assessment of the environmental impact of each site and to set limit values in the environmental permit for emissions to air of a wide range of key pollutants. These atmospheric emissions are subject to a strict monitoring regime. The emissions of individual

---

<sup>5</sup> [Commission Implementing Decision \(EU\) 2019/2010 of 12 November 2019 establishing the best available techniques \(BAT\) conclusions](#), under Directive 2010/75/EU of the European Parliament and of the Council, for waste incineration (notified under document C(2019) 7987)

<sup>6</sup> European Commission, [New EU environmental standards for waste incineration](#), 4 December 2019

<sup>7</sup> [Commission Implementing Decision \(EU\) 2019/2010 of 12 November 2019 establishing the best available techniques \(BAT\) conclusions](#), under Directive 2010/75/EU of the European Parliament and of the Council, for waste incineration (notified under document C(2019) 7987)

<sup>8</sup> Waste Management World, [Waste-to-Energy Sector Welcomes New Ambitious Standards for Health and Environmental Protection](#), 5 December 2019

<sup>9</sup> [Incinerators: Licensing: Written question – 308](#), answered 7 January 2020

incinerators can be found using the following link:  
<http://naei.beis.gov.uk/data/map-large-source>.

The Global Warming Potential (GWP) of a waste incineration plant is assessed as part of the permitting process undertaken by the regulator, taking into account emissions of carbon dioxide (CO<sub>2</sub>) as well as nitrous oxide. The regulator assesses the equivalent amount of CO<sub>2</sub> that the plant will emit against the European standards to ensure that the plant is using best available techniques to minimise GWP.

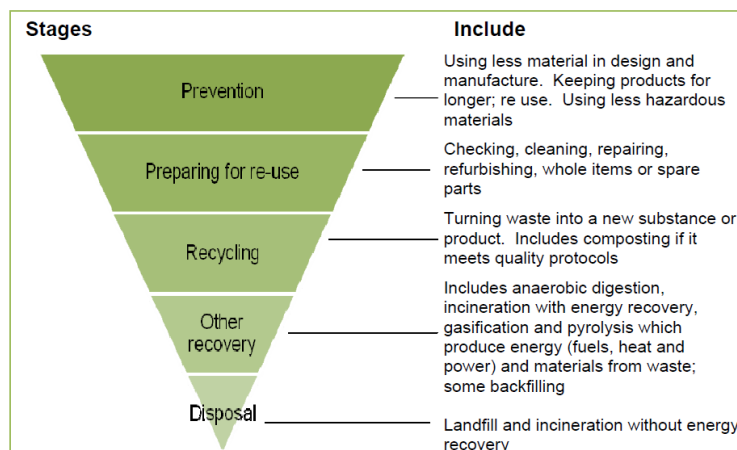
If issued, permits will contain a requirement for the operator to review opportunities for improving energy efficiency at least every four years and thereby reduce CO<sub>2</sub> emissions where possible.<sup>10</sup>

In addition to obtaining the correct environmental permits, new incineration plants will also need obtain planning permission. Further information about the planning considerations for England is set out in the UK Government's [Planning Policy for Waste](#) document, 2014.

### 1.3 Incineration and the waste hierarchy

The "waste hierarchy" ranks waste management options according to what is best for the environment. The waste hierarchy is set out at Article 4 of the *EU Waste Framework Directive (2008/98/EC)*, as amended.

The definitions of each of the stages can be found in Article 3 of the Directive. It gives top priority to preventing waste in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery, and last of all disposal (e.g. landfill and incineration where there is no energy recovery). A chart from the Department for Environment, Food and Rural Affairs shows the waste hierarchy as follows:<sup>11</sup>



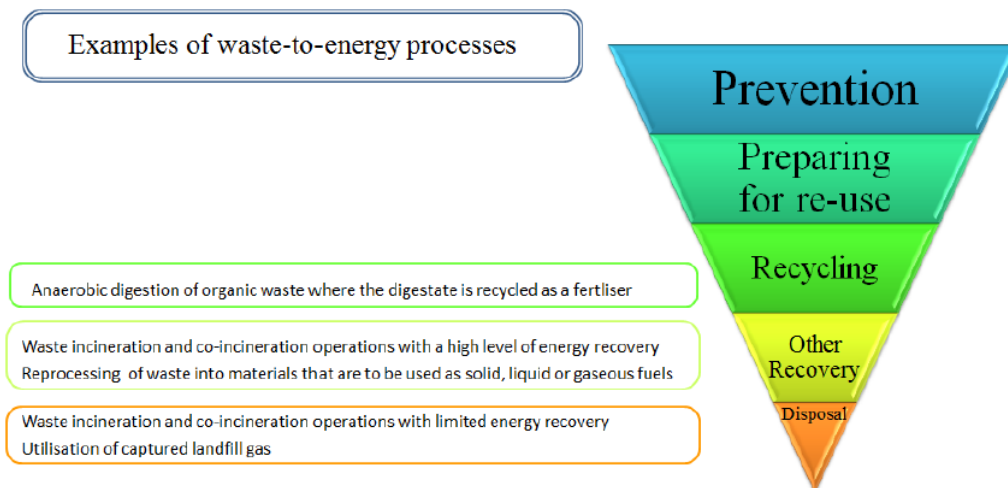
Energy from Waste (EfW) or Waste to Energy (EtW) are terms used to describe incineration processes that involve burning waste at high temperatures (> 850 °C) and where energy from this process is recovered in the form of heat or electricity.

<sup>10</sup> [Incinerators: Written question – 112708](#), answered 20 November 2017

<sup>11</sup> Defra, [Guidance on applying the waste hierarchy](#), June 2011, p3

These processes encompass very different waste treatment operations, ranging from 'disposal' and 'recovery' to 'recycling' within the hierarchy. For example, processes such as anaerobic digestion which result in the production of a biogas and of a digestate are regarded by EU waste legislation as a recycling operation.<sup>12</sup> On the other hand, waste incineration with limited energy recovery is regarded as disposal.<sup>13</sup>

A graphic from the European Commission illustrates where different energy from waste processes fit within the hierarchy:<sup>14</sup>



## 1.4 Incineration policy

In the December 2018 Resources and Waste Strategy, published under Prime Minister May, the Government said that “Incineration currently plays a significant role in waste management in the UK, and the Government expects this to continue.”<sup>15</sup>

### Possible taxation

The 2018 Resources and Waste Strategy indicated that the Government may consider a tax on incineration, should other policies to incentivise recycling not deliver the required results:

Should wider policies not deliver the Government’s waste ambitions in the long-term, we will consider the introduction of a tax on the incineration of waste. (...)

<sup>12</sup> Article 2 (6) of Commission Decision 2011/753/EU establishing rules and calculation methods for verifying compliance with the targets set in Article 11(2) of Directive 2008/98/EC of the European Parliament and of the Council. OJ L 310 of 25.11.2011.

<sup>13</sup> European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, [The role of waste-to-energy in the circular economy](#), 26 January 2017, COM(2017) 34 final, p4

<sup>14</sup> European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, [The role of waste-to-energy in the circular economy](#), 26 January 2017, COM(2017) 34 final, p4

<sup>15</sup> HM Government, [Our waste, our resources: a strategy for England](#), 18 December 2018, p79

However, Budget 2018 set out the Government's long term ambition to maximise the amount of waste sent to recycling instead of incineration and landfill. Any consideration would take into account how such a tax would work alongside Landfill Tax and the possible impacts on local authorities.<sup>16</sup>

## Recovery of heat from Energy from Waste

The 2018 Resources and Waste Strategy also set out how the Government wanted to increase Energy from Waste efficiency so that the heat from the process is recovered and can be used as a source for district heat networks, and ensure future plants achieved energy recovery status:

### **3.2.1 Driving greater efficiency of Energy from Waste (EfW) plants by encouraging use of the heat the plants produce**

England has around 40 EfW plants. Eight operate in Combined Heat and Power (CHP) mode, delivering greater efficiency than solely generating electricity. We want to help the companies that run EfW plants to use the heat produced to improve their efficiency, and to help industry make the right decisions over infrastructure investment.

Work is underway across Government to make the remaining plants more efficient, by assessing and removing barriers to making use of heat produced when incinerating waste. The Department for Business, Energy and Industrial Strategy (BEIS) has a Heat Networks Investment Project, with a £320m capital fund, and we are working to ensure that this project helps to utilise EfW plants as a source of heat for district heat networks where possible. As part of the review of the Waste Management Plan for England in 2019, Defra will work with the Ministry of Housing, Communities and Local Government (MHCLG) to ensure that the Waste Management Plan for England and the National Planning Policy for Waste and its supporting planning practice guidance reflects the policies set out in this Strategy. This will consider how to ensure, where appropriate, future plants are situated near potential heat customers.

In addition, we will work closely with industry to secure a substantial increase in the number of EfW plants that are formally recognised as achieving recovery status, and will ensure that all future EfW plants achieve recovery status.<sup>17</sup>

## 1.5 Opposition to incineration

Incineration can be a controversial form of waste management. Proposals for new incineration facilities often face strong public opposition.<sup>18</sup>

Many environmental groups oppose incineration. For example, Friends of the Earth summaries its reasons for opposing incineration on its website as follows:

<sup>16</sup> HM Government, [Our waste, our resources: a strategy for England](#), 18 December 2018, p79

<sup>17</sup> HM Government, [Our waste, our resources: a strategy for England](#), 18 December 2018, p77

<sup>18</sup> See for example, Monmouthshire Beacon, "[Opposition to Usk Valley incinerator heats up](#)" 1 November 2019

Friends of the Earth opposes incineration because it:

- Causes climate change – and is an inefficient way of generating energy.
- Destroys valuable materials that could be recycled into new products. Recycling avoids having to make products from virgin materials.
- Doesn't provide an incentive for reducing waste. Contracts for incinerators are long, requiring waste for 20 years.<sup>19</sup>

There are also specific campaign groups that oppose incineration. [UKWIN](#) (UK Without Incineration Network), summarises its opposition on its website under the following headings:

- Incineration is a barrier to the Circular Economy
- Incineration depresses recycling
- Incineration wastes finite resources
- Incineration exacerbates climate change
- Incineration gives rise to legitimate air pollution concerns
- Incineration overcapacity exists and is harmful
- Incinerators cause a nuisance.<sup>20</sup>

## 1.6 Carbon emissions from incineration

A PQ response from November 2019 set out the most recent data on carbon dioxide equivalent greenhouse gas emissions from waste incineration:

Statistics on UK greenhouse gas (GHG) emissions by source sector are published annually by the National Atmospheric Emissions Inventory (NAEI) and are available on the NAEI website.

In 2016, approximately 5.1 million tonnes of carbon dioxide equivalent GHG emissions were emitted from incineration in the waste and energy supply sectors in the UK. Of this, 4.8 million tonnes of carbon dioxide equivalent GHG emissions were emitted in the energy supply sector. Emissions from biogenic waste material are not included, consistent with domestic and international reporting of GHG emissions.<sup>21</sup>

To put this in the context of overall greenhouse gas emissions from waste, the Committee on Climate Change's July 2019 report, Reducing UK emissions 2019 Progress Report to Parliament, set out annual total emissions from waste:

Total emissions from waste increased by 1% to 20.4 MtCO<sub>2</sub>e [million tonnes of carbon dioxide equivalent] in 2017, and were 69% below 1990 levels. Almost 70% of emissions from waste

---

<sup>19</sup> Friends of the Earth website, [All you need to know about waste and recycling](#) [downloaded on 10 April 2019]

<sup>20</sup> UKWIN website, [why oppose incineration](#) [downloaded on 10 April 2019]

<sup>21</sup> [Incinerators: Greenhouse Gas Emissions: Written question - HL460](#), answered on 5 November 2019



were methane from the anaerobic decomposition of biodegradable waste in landfill sites.<sup>22</sup>

Government figures showed that in 2017, 4% of total UK greenhouse gas emissions were from waste management.<sup>23</sup>

## 1.7 Public Health England: air quality and health

There has been concern about the impact of air pollution from waste incinerators on human health. This concern in particular relates to Particulate Matter (PM). The major components of PM are sulfate, nitrates, ammonia, sodium chloride, black carbon, mineral dust and water.<sup>24</sup> The smaller the PM number, the smaller the size of the particle. A [factsheet](#) from the World Health Organization (WHO) sets out that the smaller the size of the particle, the further it can enter the lungs and the blood stream. On health effects of PM, the WHO states, "There is a close, quantitative relationship between exposure to high concentrations of small particulates (PM<sub>10</sub> and PM<sub>2.5</sub>) and increased mortality or morbidity, both daily and over time."<sup>25</sup>

Public Health England funded a study to examine emissions of PM from incinerators and health. The study was conducted by the Small Area Health Statistics Unit (SAHSU) at Imperial College London. The outcome of the study was two papers published respectively in November 2018 and May 2019. A June 2019 PQ response summarised the findings as follows:

Public Health England (PHE) has funded a study to further extend the evidence base on municipal waste incinerators (MWIs). The study found that emissions of particulate matter (PM10) from MWIs are low and make only a small contribution to ambient background levels. The report is available at the following link:

<http://pubs.acs.org/doi/abs/10.1021/acs.est.6b06478>

No evidence was found of a link between exposure to PM10, which includes PM2.5, PM1 and PM0.1 emitted from MWIs and infant mortality, or the other birth outcomes investigated. Further information is available at the following link:

<https://doi.org/10.1016/j.envint.2018.10.060>

The latest paper found no increased risk of congenital anomalies from exposure to PM10 emissions, however living closer to the incinerators was associated with a very small increase in risk of some birth defects. As acknowledged by the authors, this finding may be because the study could not fully adjust for factors such as other sources of pollution around MWIs or deprivation. The report is available at the following link:

<https://www.sciencedirect.com/science/article/pii/S0160412019308104><sup>26</sup>

<sup>22</sup> Committee on Climate Change, [Reducing UK emissions 2019 Progress Report to Parliament](#), July 2019, p26

<sup>23</sup> National Statistics, [Annex: 1990-2017 UK Greenhouse Gas Emissions, Final Figures by End User](#), March 2019, p5

<sup>24</sup> World Health Organization, [Ambient \(outdoor\) air pollution](#), 2 May 2018

<sup>25</sup> World Health Organization, [Ambient \(outdoor\) air pollution](#), 2 May 2018

<sup>26</sup> [Incinerators: Health Hazards: Written question – 268356](#), answered 25 June 2019

In October 2019 Public Health England published a guidance statement following the modern municipal waste incinerators (MWIs) study, as follows:

The results of a major study on modern municipal waste incinerators (MWIs) have been published by the Small Area Health Statistics Unit (SAHSU) at Imperial College London.

The 2 papers - published respectively in November 2018 and May 2019 - found no evidence of an increased risk of infant mortality for children living close to MWIs.

A final paper, published in June 2019, found no evidence of increased risk of congenital anomalies from exposure to MWI chimney emissions, but a small potential increase in risk of congenital anomalies for children born within ten kilometres of MWIs.

The SAHSU authors acknowledge the increase in risk of congenital anomalies linked to distance from MWIs is the cruder of the two measures and may well be down to not fully adjusting the study for factors such as other sources of pollution around MWIs or deprivation.

A causal association between the increased risk of congenital anomalies for children born close to MWIs has not been established.

PHE's risk assessment remains that modern, well run and regulated municipal waste incinerators are not a significant risk to public health. While it is not possible to rule out adverse health effects from these incinerators completely, any potential effect for people living close by is likely to be very small.

This view is based on detailed assessments of the effects of air pollutants on health and on the fact that these incinerators make only a very small contribution to local concentrations of air pollutants.

PHE will continue to review its advice in light of new substantial research on the health effects of incinerators published in peer-reviewed journals.

The study was funded by Public Health England and the Scottish Government, with support from the Medical Research Council and the National Institute for Health Research.<sup>27</sup>

## 1.8 Incineration and the circular economy

A circular economy means re-using, repairing, refurbishing and recycling existing materials and products and regarding waste as something that can be turned into a resource. It maximises the value of resources to benefit both the economy and the environment. This contrasts with a linear "take-make-consume-dispose" model which assumes that resources are abundant, available and cheap to dispose.

The 2018 Resources and Waste Strategy set the then UK Government's ambition to move towards a more circular economy: "We will leave behind our traditional linear economic model and create a more

---

<sup>27</sup> Public Health England [PHE statement on modern municipal waste incinerators \(MWIs\) study](#), 15 October 2019

sustainable and efficient circular model from which the environment, the economy and society all benefit.”<sup>28</sup>

Environmental organisations, such as the Green Alliance, have argued that public and private infrastructure investment in energy from waste facilities has perpetuated the linear model.<sup>29</sup> They express concern that continued investment in incineration undermines recycling targets.<sup>30</sup> Similarly, UKWIN has stated that many recyclable materials can end up being incinerated:

Shlomo Downen, a director at UKWIN, says that most of what is described as ‘residual waste’ and then burned isn’t really residual. The contents of black bin bags aren’t sorted in the way that recycling collections are and so rubbish chucked in a regular bin will normally make its way swiftly to landfill or incineration, whatever it contains. Hard-to-recycle plastic rejected by recycling plants (such as black plastic food containers and film) meets the same fate. ‘It’s not that what is leftover that could have been recycled or composted has been taken out, it’s just what the local authority couldn’t be bothered to compost or recycle,’ says Downen.<sup>31</sup>

The Green Alliance argues that the Government should shift focus upstream, so that materials are captured and repurposed before they become waste.<sup>32</sup>

The Government’s December 2019 Queen’s Speech announced that an Environment Bill will be introduced which will include measures to minimise waste, promote resource efficiency and move towards a circular economy:

These measures include extended producer responsibility, a consistent approach to recycling, tackling waste crime, introducing deposit return schemes, and more effective litter enforcement. We will also ban the export of polluting plastic waste to non- OECD countries, consulting with industry, NGOs, and local councils on the date by which this should be achieved.<sup>33</sup>

These measures are expected to be broadly similar to those introduced in the [Environment Bill 2019](#). This Bill passed second reading but fell at dissolution for the 2019 General Election. For further information about the measures in this Bill see [Commons Library Analysis of the Environment Bill 2019](#), 24 October 2019.

<sup>28</sup> HM Government, [Our waste, our resources: a strategy for England](#), 18 December 2018, p16

<sup>29</sup> Green Alliance, [Building a circular economy How a new approach to infrastructure can put an end to waste](#), November 2019

<sup>30</sup> Green Alliance, [Building a circular economy How a new approach to infrastructure can put an end to waste](#), November 2019

<sup>31</sup> Geographical website, “[Up in smoke: the pros and cons of burning rubbish](#)” 15 October 2018

<sup>32</sup> Green Alliance, [Building a circular economy How a new approach to infrastructure can put an end to waste](#), November 2019

<sup>33</sup> HM Government, [Queen’s Speech December 2019: background briefing notes](#), 19 December 2019, p113

## 2. News items

Air Quality News

20 August 2019

**UK's first commercial waste to aviation fuel plant proposed**

<https://airqualitynews.com/2019/08/20/uks-first-commercial-waste-to-aviation-fuel-plant-proposed/>

BBC News Online

20 July 2019

**Washington 'monster incinerator' plan turned down**

<https://www.bbc.co.uk/news/uk-england-tyne-49056263>

BBC News Online

7 May 2019

**Waste incinerator rejected after Extinction Rebellion protest**

<https://www.bbc.co.uk/news/uk-wales-48183677>

Resource website

18 October 2018

**UK incinerators released 11m tonnes of CO2 in 2017, says UKWIN**

<https://resource.co/article/uk-incinerators-released-11m-tonnes-co2-2017-says-ukwin-12922>

Geographical website

15 October 2018

**Up in smoke: the pros and cons of burning rubbish**

<https://geographical.co.uk/nature/energy/item/2969-incineration-tax>

## 3. Press releases

### Environmental Services Association

#### Debate on Waste Incineration Facilities Westminster Hall, Tuesday 11 February 2020 at 9.30am

The Environmental Services Association (ESA) is the trade body which represents the UK's recycling and waste management industry. Our member companies provide essential services to local communities and businesses by collecting, sorting, and treating their waste to recover materials and energy for the economy, while protecting the environment and human health.

ESA members are working hard to increase recycling rates in the UK and are committed to help the Government deliver a sustainable and resource-efficient economy. However, as our [Energy from Waste in the UK](#) report highlights, high quality recycling is not always possible, for a number of reasons including the over-contamination of waste, the impossibility to recycle materials infinitely or the need to dispose of remaining residues after recycling.

Currently, Energy from Waste (EfW) is the most sustainable option for dealing with our combustible non-recyclable waste, after economically recyclable materials have been collected. Our members' Energy from Waste facilities play an important role in driving the UK towards a more circular economy, by recovering energy from material that would otherwise be wasted in landfills.

#### EfW mitigates Climate Change by avoiding CO2 emissions

*A better alternative than landfill or waste exports* When considering the environmental impacts of EfW, one common mistake is to fail to consider the avoided CO2 emissions compared with the two alternatives to deal with our non-recyclable waste: landfilling, exporting or incinerating. Among these, incineration is the most environmentally friendly option. As such, EfW protects the environment by saving 200kg of CO2 for every tonne of waste diverted from landfill.

*Production of low-carbon heat and electricity* Modern EfW plants are not just facilities where non-recyclable waste is being disposed of. They contribute to recover as much value from the waste stream as possible by generating energy from material that cannot be recycled. These plants provide low carbon electricity and heat to millions of businesses and homes around the country, avoiding significant amount of CO2 emissions by reducing demand for other carbon-intensive sources of electricity and heat. They also contribute to materials recycling and the circular economy, given that around 20% materials (ash reprocessing) and 3% metals of high value is recovered.

*Lack of infrastructures to support alternative fuels vehicles* While ESA strongly supports measures to improve air quality in the UK, there is currently a lack of infrastructure to support alternative fuels vehicles

such as CNG vehicles, which perform better environmentally than their diesel counterparts.

#### There are no proven adverse health effects from EfW

EfW facilities are stringently regulated by the Environment Agency to very tight emissions standards, which were recently strengthened even further and are among the most heavily environmentally regulated in the EU. Furthermore, Public Health England, and every other robust scientific study into EfW emissions, has found that risks to health from these plants are incredibly low and that modern EfW facilities make only a minor contribution to local concentrations of air pollutants. To put air pollution concerns into perspective, the National Atmospheric Emissions Inventory (NAEI) data shows that in 2015 bonfire night produced 10 times more dioxins than EfW across the whole year.

#### Conventional combustion is more efficient than gasification

Two main EfW technologies are currently in use: conventional combustion and advanced thermal treatments (ATTs) such as pyrolysis and gasification. ESA's view is that conventional combustion remains the main viable option to deal with our non-recyclable waste. ATTs projects often face difficulties with cost overruns and various technical challenges, and have so far proven to be less efficient.

#### EfW does not compete with recycling

Some unhelpfully oppose recycling and EfW when the real option is between landfill and EfW. Instead of opposing EfW, more should be done to increase recycling and reduce non-recyclable waste from arising in the first place. It is not the existence of EfW that prevents recycling, therefore, but the lack of sustainable end markets for recycled material.

#### There is a significant EfW under-capacity in the UK

The UK is experiencing a significant under-capacity of EfW, which is why we landfill around 12Mt of household and commercial waste and send around 3.5Mt of non-recyclable waste for treatment overseas. There is a question about how much capacity we will need going forward. At the end of 2017, ESA commissioned a Tolvik Consulting to synthesise different estimates, and it found that even if we meet 65% recycling, there is still a risk of under-capacity, and we will still be heavily reliant on exports.

### **Public Health England**

#### **PHE statement on modern municipal waste incinerators (MWIs) study**

**15 October 2019**

The results of a [major study on modern municipal waste incinerators](#) (MWIs) have been published by the Small Area Health Statistics Unit (SAHSU) at Imperial College London.

The 2 papers - published respectively in November 2018 and May 2019 - found no evidence of an increased risk of infant mortality for children living close to MWIs.

A final paper, published in June 2019, found no evidence of increased risk of congenital anomalies from exposure to MWI chimney emissions, but a small potential increase in risk of congenital anomalies for children born within ten kilometres of MWIs.

The SAHSU authors acknowledge the increase in risk of congenital anomalies linked to distance from MWIs is the cruder of the two measures and may well be down to not fully adjusting the study for factors such as other sources of pollution around MWIs or deprivation.

A causal association between the increased risk of congenital anomalies for children born close to MWIs has not been established.

PHE's risk assessment remains that modern, well run and regulated municipal waste incinerators are not a significant risk to public health. While it is not possible to rule out adverse health effects from these incinerators completely, any potential effect for people living close by is likely to be very small.

This view is based on detailed assessments of the effects of air pollutants on health and on the fact that these incinerators make only a very small contribution to local concentrations of air pollutants.

PHE will continue to review its advice in light of new substantial research on the health effects of incinerators published in peer-reviewed journals.

The study was funded by Public Health England and the Scottish Government, with support from the Medical Research Council and the National Institute for Health Research.

## **Imperial College London**

### **Major study finds no conclusive links to health effects from waste incinerators**

**21 June 2019**

Researchers have found no link between exposure to emissions from municipal waste incinerators (MWIs) and infant deaths or reduced foetal growth.

However, they show living closer to the incinerators themselves is associated with a very small increase in the risk of some birth defects, compared to the general population.

But whether this is directly related to the incinerator or not remains unclear.

The findings come from the largest and most comprehensive analysis to date of the effects of municipal waste incinerators (MWIs) on public health in the UK.

MWIs are used to burn waste that is not recycled, composted or sent to landfill and can include materials such as paper, plastic, wood and metal.

While MWI emissions are governed by EU regulations, public concern remains around their potential impact on public health and scientific studies to date have been inconsistent or inconclusive.

The analysis, led by a team at Imperial College London and funded by Public Health England and the Scottish Government, looked at MWIs at 22 sites across the UK between 2003 and 2010.

Researchers from the [UK Small Area Health Statistics Unit \(SAHSU\)](#) at Imperial first analysed concentrations of fine particles called PM10 (particulate matter measuring 10 micrometres or less in diameter) emitted from the chimneys of the incinerators as waste is burned.

#### 4. Effects of small particles

Computer models generated from the data showed how these particles spread over a 10 km radius around 22 MWIs in England, Scotland and Wales.

The models show that MWIs added very little to the existing background levels of PM10 at ground level – with existing PM10 concentrations at ground level on average 100 to 10,000 times higher than levels emitted by the chimneys (Environment Science & Technology, 2017).

Using these models, the team then investigated potential links between concentrations of PM10 emitted by MWIs and any increased risk of adverse birth outcomes.

In an [earlier study](#) (*Environment International*, 2018), they found that analysis of records covering more than one million births in England, Scotland and Wales revealed no evidence of a link between small particles emitted by the incinerators and adverse birth outcomes such as effects on birthweight, premature birth, infant death, or stillbirth, for children born within 10 km of MWIs in Great Britain.

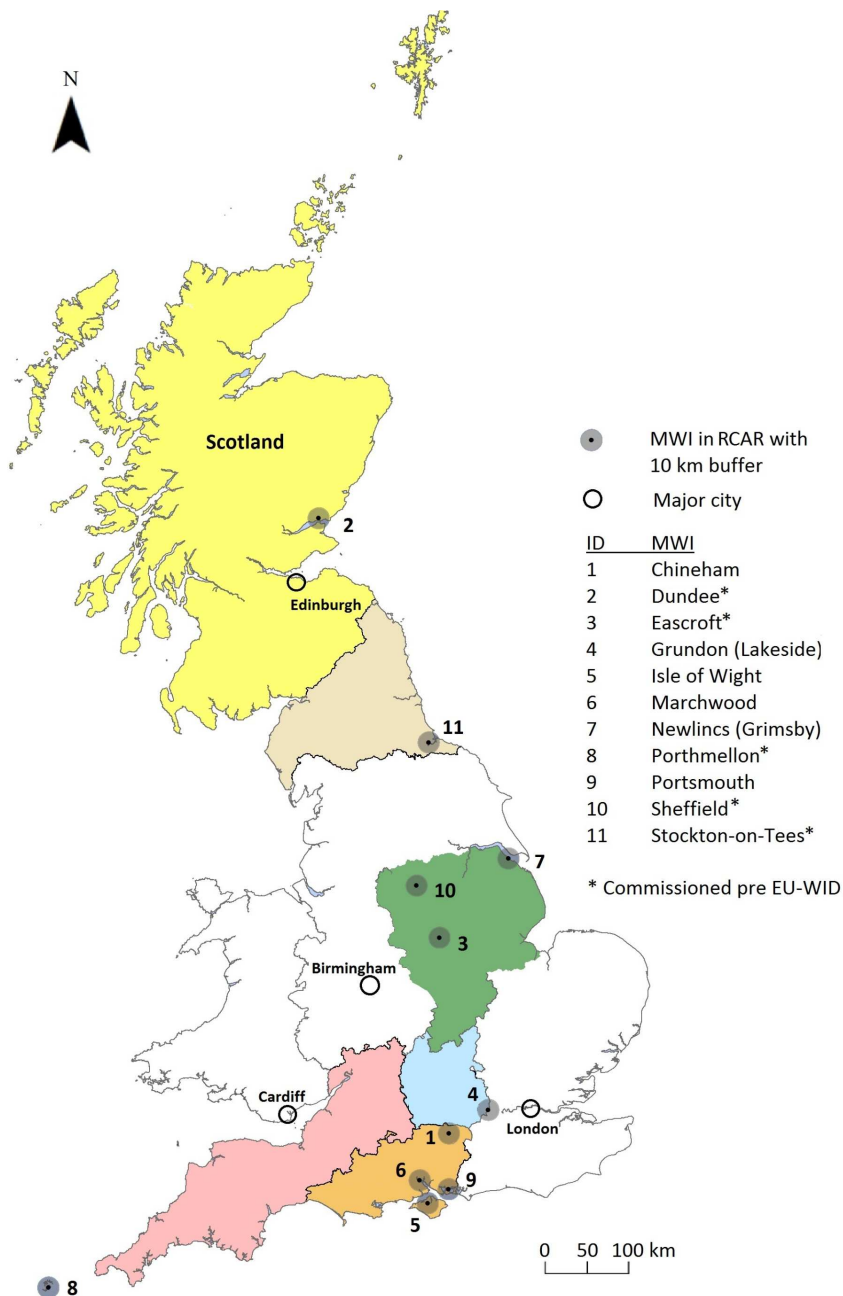
The team's [latest findings](#), published in the journal *Environment International*, looked at occurrence of birth defects within 10 km of a subset of 10 incinerators in England and Scotland between 2003 and 2010.

In their analysis, the team used health data on more than 5000 cases of birth defects among over 200,000 births, still births and terminations in England and Scotland.

They found no association between birth defects and the modelled concentrations of PM10 emitted by MWIs, but there was a small increase in the risk of two birth defects among those living closer to MWIs – specifically congenital heart defects and hypospadias (affecting the male genitalia – where the opening of the urethra is not at the top of the penis). These birth defects typically require surgery but are rarely life-threatening.



In the UK, congenital heart defects affect approximately 5.3 in 1000 births and 1.9 per 1000 males are born with hypospadias (Source: NCARDS 2016\*).



The team's latest findings looked at occurrence of birth defects within 10 km of a subset of 10 incinerators in England and Scotland between 2003 and 2010. Grundon (Lakeside) was excluded due to insufficient data on birth outcomes. (Credit: Parkes et al. 2019)

#### 5. Excess risk

In terms of excess risk, the team estimates that the associated increase in risk for these two birth defects could be around 0.6 cases per 1,000 total births for congenital heart defects and 0.6 cases per 1,000 male births for hypospadias within 10 km of an incinerator.

[Professor Paul Elliott](#), Director of the UK Small Area Health Statistics Unit (SAHSU) said:

Based on the available data, our findings showing that there is no significant increased risk of infant death, stillbirth, preterm birth or effects on birthweight from municipal waste incinerators are reassuring.

The findings on birth defects are inconclusive, but our study design means we cannot rule out that living closer to an incinerator in itself may slightly increase the risk of some specific defects – although the reasons for this are unclear.

[Professor Mireille Toledano](#), Chair in Perinatal and Paediatric Environmental Epidemiology at Imperial, said:

In these studies we found a small increase in risk for children living within 10 km of an MWI being born with a heart defect, or a genital anomaly affecting boys, but did not find an association with the very low levels of particulates emitted.

This increase with proximity to an incinerator may not be related directly to emissions from the MWIs. It is important to consider other potential factors such as the increased pollution from industrial traffic in the areas around MWIs or the specific population mix that lives in those areas.

Professor Anna Hansell, Director of the Centre for Environmental Health and Sustainability at the University of Leicester, who previously led the work while at Imperial College London, added:

Taken together, this large body of work reinforces the current advice from Public Health England – that while it's not possible to rule out all impacts on public health, modern and well-regulated incinerators are likely to have a very small, or even undetectable, impact on people living nearby.

The team explains that while the results of the emissions studies are reassuring, they cannot rule out a link between the increased incidence of the two birth defects and the activities of the MWIs.

They add that while they adjusted their results for socioeconomic and ethnic status, these may still influence birth outcomes findings. Poorer families may be living closer to MWIs due to lower housing or living costs in industrial areas, and their exposure to industrial road traffic or other pollutants may be increased.

The researchers highlight that their findings are limited by a number of factors. Also, they did not have measurements (for the hundreds of thousands of individual births considered) of metals or chemical compounds such as polychlorinated biphenyls (PCBs) and dioxins, but used PM10 concentrations as a proxy for exposure to MWI emissions – as has been used in other incinerator studies.

They add that ongoing review of evidence is needed to explore links further, as well as ongoing surveillance of incinerators in the UK to monitor any potential long-term impacts on public health.

The research was funded by Public Health England and the Scottish Government, with support from the Medical Research Council and the National Institute for Health Research.

(i) 'Risk of congenital anomalies near municipal waste incinerators in England and Scotland: retrospective population-based cohort study' by Brandon Parkes et al. is published in Environment International DOI: 10.1016/j.envint.2019.05.039

(ii) 'Fetal growth, stillbirth, infant mortality and other birth outcomes near UK municipal waste incinerators; retrospective population-based cohort and case-control study' by Rebecca Ghosh et al. is published in Environment International DOI: 10.1016/j.envint.2018.10.060 <https://www.sciencedirect.com/science/article/pii/S0160412018316398>

(iii) 'Estimating Particulate Exposure from Modern Municipal Waste Incinerators in Great Britain' by Philippa Douglas et al. is published in Environment Science & Technology DOI: 10.1021/acs.est.6b06478 <https://pubs.acs.org/doi/abs/10.1021/acs.est.6b06478>

*The Imperial team has also published a further four papers from their study on MWIs:*

(iv) 'Bayesian spatial modelling for quasi-experimental designs: An interrupted time series study of the opening of Municipal Waste Incinerators in relation to infant mortality and sex ratio' by Anna Freni-Sterrantino et al. is published in Environment International DOI: 10.1016/j.envint.2019.04.009 <https://www.sciencedirect.com/science/article/pii/S0160412018326060>

(v) Using metal ratios to detect emissions from municipal waste incinerators in ambient air pollution data by Font et al., 2015 <https://www.sciencedirect.com/science/article/pii/S1352231015300753>

(vi) Waste incineration and adverse birth and neonatal outcomes: a systematic review by Ashworth et al., 2014 <https://www.sciencedirect.com/science/article/pii/S0160412014001147>

(vii) Comparative assessment of particulate air pollution exposure from municipal solid waste incinerator emissions by Ashworth et al., 2013 <https://www.taylorfrancis.com/books/e/9781315366074/chapters/10.1201/9781315366074-13>

Birth outcome data were taken from multiple sources, including the Office for National Statistics, NHS Wales' Informatics Service (NWIS)/ Health Solutions Wales (HSW), the Information Services Division (ISD) Scotland, Department of Health, and the British and Irish Network of Congenital Anomaly Researchers (BINOCAR) and constituent regional congenital anomaly registers.

\*NCARDRS 2016 – 'National Congenital Anomaly and Rare Disease Registration Service: Congenital anomaly statistics 2016 – tables' [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/749734/Congenital\\_anomaly\\_statistics\\_2016\\_data\\_tables.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/749734/Congenital_anomaly_statistics_2016_data_tables.pdf)

The 10 incinerators in the birth defects study were: Chineham, Hampshire; Dundee, Scotland; Eastcroft, Nottinghamshire; Isle of Wight; Marchwood, Hampshire; Grimsby, Lincolnshire; Porthmellon, Scilly Isles; Portsmouth, Hampshire; Sheffield, South Yorkshire; Stockton-on-Tees, County Durham.

## **Environmental Services Association**

### **Health study should reassure residents living near Energy from Waste plants**

**21 June 2019**

The UK's waste and recycling sector has today responded to a study from Imperial College London's Small Area Health Statistics Unit (SAHSU) addressing health impacts of emissions from Energy from Waste (EfW).

The Environmental Services Association (ESA), which represents the sector, has welcomed the clear evidence that there is no link between EfW chimney emissions and the health impacts under investigation, and has called for further work on elements of the paper that were inconclusive.

ESA's Executive Director, Jacob Hayler said:

The latest study from SAHSU reflects the research unit's own earlier findings that there are no conclusive links between exposure to EfW emissions and adverse health impacts. The paper reinforces Public Health England's position, which remains that modern, well run and regulated municipal waste incinerators do not pose a significant risk to public health, and this should reassure anyone living near an EfW plant.

We would however welcome further research into some health aspects raised by the report. As recognised by the researchers, other sources of pollution—as well as socio-economic dynamics—may be at play, and we would like to see further work on this subject so that we can reassure everyone that—as per the wealth of existing evidence—EfWs are a safe and clean way of dealing with nonrecyclable waste whilst also generating sustainable heat and power for homes and businesses.

Notes to editors:

1. The Environmental Services Association (ESA) is the trade association representing the UK's resource and waste management industry, which is leading the transformation of how the UK's waste is managed.
2. We work with all levels of government, regulators and the public to deliver a more sustainable waste and resource management solution for the UK. ESA's recent Circular Economy report 'Going for Growth – A practical route to a circular economy', which outlines how a Circular rather than a linear economy can help manage resources sustainably, can be downloaded [here](#).

3. ESA's Members manage waste on behalf of the whole of society and we are recovering more than ever before. For example, the industry has helped quintuple the UK's household recycling rates over the last decade.

4. The sector at a glance

- Total turnover: £11 billion
- Direct Employment: 106,000 people (including waste collection, treatment and materials recovery)
- Municipal waste handled each year: 27 million tonnes
- Energy generated (across landfill gas, anaerobic digestion and energy from waste) each year: approximately 11,867 GWh, which is 3.5% of the UK's electricity
- 9,083 GWh of that was renewable electricity (taking out non-biodegradable portion of EfW) which is 11% of UK's renewable electricity
- Greenhouse gas emissions down by 70% since 1990.
- The top seven companies account for approximately 40% of turnover. Many hundreds of SMEs provide either localised or more specialised services
- Waste & recycling is the most highly rated of all council services by the public (2016 survey)

### **Greater London Assembly**

#### **'Stop allowing new waste incinerators in London' Mayor tells ministers**

**21 May 2019**

*'Stop allowing new toxic waste incinerators in London' Mayor tells ministers*

- Sadiq: Another polluting plant 'the last thing we need'
- Capital currently has three incinerators – with two more set to open

The Mayor of London, Sadiq Khan today called on the Government to stop permitting the building of 'archaic' polluting waste incinerators as he outlined his opposition to a proposed incinerator in Bexley, which is set to raise harmful NOx pollution levels.

Sadiq strongly believes that burning waste in incinerators worsens London's already toxic air quality and hinders boroughs from reaching recycling and waste reduction targets.

London has the highest incineration rate (54 per cent) in the UK for management of local authority waste, yet the lowest recycling rate (30

per cent).

The focus must be on reducing waste, particularly plastic, and protecting residents from pollution. The Mayor is encouraging boroughs to help residents to recycle food, and stop buying needless plastic bottled water, which should help to reduce landfill and mean that only truly unrecyclable waste (e.g disposable nappies and composite packaging materials that combine card, plastic and foils which cannot be separated) would need to be incinerated.

There are already three incinerators in the capital - Bexley (in the same location as the proposed site), Enfield and Lewisham. Another is being built in Sutton and is due to open this year, while a further plant has been approved for development in Enfield, both of which were approved by ministers during the previous mayor's terms.

City Hall has heard from worried Bexley residents and MPs who strongly oppose the plans and are concerned about the impact on the local area. The plant would emit more than four times as much harmful NOx as the existing local incinerator and the Crossness sewage plant combined. It could also emit arsenic, nickel and other metals that could damage the health of residents and workers both nearby and across the river.

The Mayor has reviewed the application by waste management company Cory and disputes claims that the incinerator will generate low-carbon heat and power and meet his minimum CO2 requirement for energy from waste facilities, which aims to reduce carbon emissions and help tackle London's climate emergency.

There is also insufficient evidence to make the case that there are enough homes and buildings nearby that could use heat generated from the new incinerator. The existing incinerator facility (Riverside Resource Recovery Facility) on the site has demonstrated more than enough capacity to supply sufficient heat for existing and proposed homes and workplaces in the surrounding area.

The Mayor does not have powers to stop the incinerator because final approval for the facility lies with the government.

The Mayor is a statutory consultee and will oppose this application through representations made to the Planning Inspectorate, which will make a recommendation on the application to the Government. Today he outlined his opposition in a report to Secretary of State for Business, Greg Clark.

The Mayor of London, Sadiq Khan said:

London's air is a toxic air health crisis and the last thing we need, in our modern green global city is another harmful waste-burning

incinerator polluting our city. Emissions from incinerators are bad for our health, bad for our environment and bad for our planet. Instead of granting permission for an unnecessary new incinerator that will raise pollution levels in the boroughs of Bexley and Havering, the Government should focus on boosting recycling rates, reducing the scourge of plastic waste and tackling our lethal air. I am urging ministers to reject this proposal.

#### *Notes to editors*

- The Mayor's policies focus on significantly reducing waste and achieving 65% recycling municipal waste by 2030. Approving another EFW incinerator would jeopardise achievement of these goals.
- City Hall modelling shows that with existing and recently permitted incinerators, London has enough incineration capacity and does not need another incinerator like this to manage London's non-recycled waste if the Mayor's waste reduction and recycling targets are met. It would impact on achieving the Mayor's reduction and recycling targets set out in his London Environment Strategy.
  - DEFRA in its Resources and Waste Strategy have also said that additional energy from waste infrastructure may not necessary be required if the Government's recycling and landfill reduction targets are met. Government are also considering a incineration tax if their polices for cutting waste and increasing recycling are not effective
  - Waste incinerators are well regulated by the Environment Agency, who will set emission limits based on the current best available techniques for emission reduction. However this does not mean that there are no impacts on pollution and people's health. The health impact of any pollution source depends on where it is, how much pollution there already is in the area and how many people live within the pollutant "plume".
  - The development consent order for the proposed incinerator includes the applicants assessment of impacts on local air quality as part of their environmental assessment.
  - For many pollutants, such as NO<sub>2</sub>, the health impacts are independent of the type of source: NO<sub>2</sub> from an energy from waste plant is just as harmful as from a diesel car. There is, however, a growing body of evidence that the impacts of particulates may be influenced by the source and composition of the particles.
  - The evidence on the health impacts of Energy from Waste plant is continually evolving. The GLA has commissioned a review of the current available evidence on the local impacts of Energy from Waste on people's health in London so that we can fully understand the problem and Public Health England are working with Imperial College London to research impacts of waste incineration across the UK.

## 6. Parliamentary material

### Debates

#### **Commons debate: Industrial and Commercial Waste Incineration**

**HC Deb 28 January 2020 | Vol 670 c266WH**

<http://bit.ly/2u16eIT>

#### **Commons debate: [Waste Incineration: Regulation](#)**

Motion that this House has considered the regulation of the incineration of waste. Motion lapsed.

**HC Deb 09 April 2019 | Vol 658 cc27-37W**

### PQs

[Incinerators: Greenhouse Gas Emissions](#)

#### **Asked by: Baroness Jones of Moulsecoomb**

To ask Her Majesty's Government, further to the Written Answer by Lord Duncan of Springbank on 5 November 2019 (HL460), what were the greenhouse gas emissions produced per tonne of waste processed in an energy from waste incinerator in (1) 2012, and (2) 2018.

#### **Answering member: Lord Duncan of Springbank | Department: Department for Business, Energy and Industrial Strategy**

There are two categories in the UK Greenhouse Gas Inventory that include waste being processed in an energy from waste incinerator:

- The incineration of municipal solid waste (MSW) in "Power Stations";
- The incineration of MSW in "Miscellaneous industrial/commercial combustion".

In 2012, an estimated 0.4 tonnes of CO<sub>2</sub>e (carbon dioxide equivalents) were emitted per tonne of waste processed in UK "Power Stations" and 0.8 tonnes of CO<sub>2</sub>e were emitted per tonne of waste processed in an energy from waste incinerator in UK "Miscellaneous industrial/commercial combustion".

In 2018, an estimated 0.4 tonnes of CO<sub>2</sub>e (carbon dioxide equivalents) were emitted per tonne of waste processed in UK "Power Stations" and 0.6 tonnes of CO<sub>2</sub>e were emitted per tonne of waste processed in an energy from waste incinerator in UK "Miscellaneous industrial/commercial combustion".



Emissions from biogenic waste material are not included in these figures, consistent with domestic and international reporting of greenhouse gas emissions.

**HL Deb 05 February 2020 | PQ HL928**

- [Incinerators: Greenhouse Gas Emissions](#)

**Asked by: Baroness Jones of Moulsecoomb**

To ask Her Majesty's Government, further to the Written Answer by Lord Duncan of Springbank on 5 November 2019 (HL460), what were the equivalent greenhouse gas emissions from incineration in the waste and energy supply sectors in (1) 2017, (2) 2018, and (3) 2019.

**Answering member: Lord Duncan of Springbank | Department: Department for Business, Energy and Industrial Strategy**

In 2017, an estimated 5.2 Mt (million tonnes) of CO<sub>2</sub>e (carbon dioxide equivalents) were emitted from incineration in the energy supply sector and 0.3 Mt of CO<sub>2</sub>e were emitted from incineration in the waste sector.

In 2018, an estimated 6.0 Mt of CO<sub>2</sub>e were emitted from incineration in the energy supply sector and 0.3 of CO<sub>2</sub>e were emitted from incineration in the waste sector.

Emissions from biogenic waste material are not included in these figures, consistent with domestic and international reporting of greenhouse gas emissions.

We are not currently able to provide equivalent statistics for 2019 as these are not yet available. The Final Statistics for UK Greenhouse Gas Emissions 1990-2019 will be published in February 2021.

**HL Deb 05 February 2020 | PQ HL927**

[Incinerators: Greenhouse Gas Emissions](#)

**Asked by: Baroness Jones of Moulsecoomb**

To ask Her Majesty's Government, further to the Written Answer by Lord Duncan of Springbank on 5 November 2019 (HL460), how they calculate the greenhouse gas emissions from a tonne of domestic waste being processed in an energy from waste incinerator.

**Answering member: Lord Duncan of Springbank |**

**| Department: Department for Business, Energy and Industrial Strategy**

Domestic, or household, waste is currently included within the fuel category "MSW" (Municipal Solid Waste) in the UK Greenhouse Gas Inventory. MSW refers to waste collected by municipalities or other local authorities and includes sources other than domestic waste.

The emissions per tonne of MSW processed in an energy from waste incinerator is calculated using the 2006 Intergovernmental Panel on

Climate Change Guidelines. Figures are provided for methane and nitrous oxide along with separate figures for carbon (fossil) emissions from biodegradable MSW and non-biodegradable MSW. The proportions of total MSW that is biodegradable and non-biodegradable is calculated using data from DUKES (the Digest of UK Energy Statistics). These four figures are combined to give total greenhouse gas emissions emitted per tonne of MSW processed in an energy from waste incinerator.

### **HL Deb 04 February 2020 | PQ HL926**

#### [Incinerators: Licensing](#)

#### **Asked by: Doughty, Stephen**

To ask the Secretary of State for Environment, Food and Rural Affairs, how many licences for (a) domestic (b) commercial and (c) industrial waste incineration were (i) granted and (ii) refused in each of the last five years; and for what reasons those licences were refused.

#### **Answering member: Rebecca Pow | Department: Department for Environment, Food and Rural Affairs**

This is a devolved matter and the information provided therefore relates to England only. Regulation of incinerators in England is split between the Environment Agency (EA) and local authorities. The EA regulates incinerators with a capacity of greater than 3 tonnes per hour for non-hazardous waste and 10 tonnes per day for hazardous waste. Incinerators below this size are regulated by local authorities.

Since the start of 2015 the EA has granted 27 permits for new incinerators which may take in waste arising from domestic, commercial and industrial sources and which can be classed under the following waste types for each year:

Principle waste type	Number of permits issued				
	2015	2016	2017	2018	2019
Mixed municipal waste	2	2	2	1	2
Waste wood	2	2	5	2	-
Refuse-derived fuel	1	1	-	2	1
Solid recovered fuel	1	-	-	-	-
Non-recyclable waste plastics	-	-	-	-	1

The EA also refused one permit in 2016 for a mixed municipal waste incinerator because the operator had failed to demonstrate that the height of its chimney was satisfactory.

While the EA has only refused one incinerator permit application in the last five years, other potentially unsuitable plants have been prevented during that time due to challenges from the EA, either as part of discussions before a formal application was made, or during the

assessment process leading to the operator withdrawing their application. However, the EA does not keep records of such events.

**HC Deb 07 January 2020 | PQ 308**

[\*Incinerators: Greenhouse Gas Emissions\*](#)

**Asked by: Baroness Jones of Moulsecoomb**

To ask Her Majesty's Government what amount of greenhouse gases the UK produced from incineration, including through waste to energy incinerators, in 2016.

**Answering member: Lord Duncan of Springbank | Department: Department for Business, Energy and Industrial Strategy**

Statistics on UK greenhouse gas (GHG) emissions by source sector are published annually by the National Atmospheric Emissions Inventory (NAEI) and are available on the NAEI website.

In 2016, approximately 5.1 million tonnes of carbon dioxide equivalent GHG emissions were emitted from incineration in the waste and energy supply sectors in the UK. Of this, 4.8 million tonnes of carbon dioxide equivalent GHG emissions were emitted in the energy supply sector. Emissions from biogenic waste material are not included, consistent with domestic and international reporting of GHG emissions.

**HL Deb 05 November 2019 | PQ HL460**

[\*Incinerators\*](#)

**Asked by: Doughty, Stephen**

To ask the Secretary of State for Environment, Food and Rural Affairs, how many waste incineration plants burning (a) residential, (b) commercial and (c) industrial waste were licensed in each of the last five years.

**Answering member: Rebecca Pow | Department: Department for Environment, Food and Rural Affairs**

The Environment Agency is responsible for issuing environmental permits for waste incineration plants in England. The following numbers of new permits have been issued for relevant plants over the last five years:

**2014:** Three plants each permitted to burn residential, commercial and industrial waste and one plant permitted to burn hazardous industrial wastes

**2015:** Two plants each permitted to burn residential, commercial and industrial waste

**2016:** Two plants each permitted to burn residential, commercial and industrial waste

**2017:** Two plants each permitted to burn residential, commercial and industrial waste

**2018:** One plant permitted to burn residential, commercial and industrial waste

**2019 to date:** Two plants each permitted to burn residential, commercial and industrial waste

**HC Deb 08 October 2019 | PQ 292246**

[Incinerators. Taxation](#)

**Asked by: Drew, Dr David**

To ask the Chancellor of the Exchequer, what assessments his Department has made of the effect of differing levels of incineration tax on the amount of waste going to (a) incineration and (b) recycling.

**Answering member: Robert Jenrick | Department: Treasury**

A number of respondents to last year's call for evidence on single use plastic waste suggested that an incineration tax could discourage incineration and promote other forms of waste management such as recycling.

At Budget 2018, the Chancellor announced that he would not at this point be taking forward a tax on the incineration of waste. However, should wider policies not deliver the government's waste ambitions, government will consider the introduction of such a tax, in conjunction with landfill tax, taking account of the possible impacts on local authorities.

**HC Deb 16 July 2019 | PQ 274431**

[Incinerators](#)

**Asked by: Drew, Dr David**

To ask the Secretary of State for Environment, Food and Rural Affairs, what comparative data and analysis his Department holds on (a) operational practice and (b) waste content in municipal waste incineration sites in (i) England and (ii) Italy (iii) Scandinavia and (iv) other Member States of the EU.

**Answering member: Dr Thérèse Coffey | Department: Department for Environment, Food and Rural Affairs**

None; however data and analysis on these systems is held on the European Integrated Pollution Prevention and Control Bureau's (EIPPCB) Best Available Techniques Information System.

Information on the operational practice of waste incineration plants across Europe is also contained within the current draft of the Best Available Techniques (BAT) Reference Document published by the EIPPCB, available here

[http://eippcb.jrc.ec.europa.eu/reference/BREF/WI/WI\\_BREF\\_FD\\_Black\\_Watermark.pdf](http://eippcb.jrc.ec.europa.eu/reference/BREF/WI/WI_BREF_FD_Black_Watermark.pdf)

**HC Deb 11 July 2019 | PQ 271342**

*[Incinerators: Waste Heat Recovery](#)*

**Asked by: Drew, Dr David**

To ask the Secretary of State for Business, Energy and Industrial Strategy, if he will publish the locations of waste incinerators that supply energy for district heating.

**Answering member: Chris Skidmore | Department: Department for Business, Energy and Industrial Strategy**

The Department works with colleagues in Defra to collate publicly available information on waste-incinerators in England and Wales which received planning permission or environmental permits to be 'enabled' to supply heat through district heating facilities. This is published on the Renewable Energy Planning database page on Gov.uk. It is a commercial decision for the enabled facility whether to then supply heat through the district network; this information is not collected centrally.

Based on this information the locations (as of March this year) of waste incinerators which are heat and power 'enabled' are as follows:

Coventry & Solihull Waste Disposal Company	West Midlands
Eastcroft Energy-from-Waste	Nottinghamshire
Bolton Thermal Recovery Facility	Greater Manchester
Cross Green Energy Recovery Facility	West Yorkshire
Lincoln Energy-from-Waste	Lincolnshire
Sheffield Energy Recovery Facility	South Yorkshire
North East Energy Recovery Centre	Cleveland
North Yard Energy-from-Waste	Devon
Ardley Energy-from-Waste	Oxfordshire
Trident Park Energy Recovery Facility	South Glamorgan
SELCHP Energy Recovery Facility	London
Fibrepower, Slough	Berkshire
Edmonton EcoPark Energy-from-Waste	London
Runcorn Energy-from-Waste	Cheshire
Twinwoods Heat and Power CHP	Bedfordshire

**HC Deb 03 July 2019 | PQ 270242**

[Incinerators: Health Hazards](#)

**Asked by: Drew, Dr David**

To ask the Secretary of State for Health and Social Care, what recent research on the effects on levels of public health of emissions of (a) PM<sub>2.5</sub>, (b) PM<sub>1</sub> and (c) PM<sub>0.1</sub> from waste incinerators (i) he has undertaken and (ii) has formed the basis of an assessment of the implications for his policies.

**Answering member: Seema Kennedy | Department: Department of Health and Social Care**

Public Health England (PHE) has funded a study to further extend the evidence base on municipal waste incinerators (MWIs). The study found that emissions of particulate matter (PM<sub>10</sub>) from MWIs are low and make only a small contribution to ambient background levels. The report is available at the following link:

<http://pubs.acs.org/doi/abs/10.1021/acs.est.6b06478>

No evidence was found of a link between exposure to PM<sub>10</sub>, which includes PM<sub>2.5</sub>, PM<sub>1</sub> and PM<sub>0.1</sub> emitted from MWIs and infant mortality, or the other birth outcomes investigated. Further information is available at the following link:

<https://doi.org/10.1016/j.envint.2018.10.060>

The latest paper found no increased risk of congenital anomalies from exposure to PM<sub>10</sub> emissions, however living closer to the incinerators was associated with a very small increase in risk of some birth defects. As acknowledged by the authors, this finding may be because the study could not fully adjust for factors such as other sources of pollution around MWIs or deprivation. The report is available at the following link:

<https://www.sciencedirect.com/science/article/pii/S0160412019308104>

PHE's position remains that well run and regulated modern MWIs are not a significant risk to public health. PHE will review its advice in light of new substantial research on the health effects of incinerators published in peer reviewed journals. To date, PHE is not aware of any evidence that requires a change in their position statement. This statement can be viewed at the following link:

<https://www.gov.uk/government/publications/municipal-waste-incinerator-emissions-to-air-impact-on-health>

**HC Deb 02 July 2019 | PQ 268356**

[Waste Incineration](#)

**Asked by: John Grogan**

What assessment he has made of the potential merits of a moratorium on new waste incineration plants to promote recycling.

**Answered by: The Parliamentary Under-Secretary of State for Environment, Food and Rural Affairs (Dr Thérèse Coffey) | Department: Environment, Food and Rural Affairs**

It is important to do whatever we can to recycle as much waste as possible, but waste incineration plants continue to play an important role in generating energy instead of diverting waste to landfill. However, our assessment is that additional residual waste energy capacity above that already planned to 2020 should not be needed if we achieve our recycling targets.

**HC Deb 09 May 2019 | Vol 659 cc643-4**

### [Incinerators](#)

**Asked by: Grogan, John**

What recent assessment he has made of the adequacy of waste incineration capacity.

**Answering member: Dr Thérèse Coffey | Department: Department for Environment, Food and Rural Affairs**

An assessment of England's municipal waste treatment capacity – including incineration with energy recovery – was set out in the Resources and Waste Strategy and the associated Evidence Annex published in December 2018. Existing operational capacity is sufficient to treat around 36% of municipal residual waste at current levels. While energy from waste plays an important role in diverting waste from landfill, our emphasis is on greater waste prevention, re-use or recycling.

**HC Deb 28 March 2019 | PQ 910085**

### [Incinerators: Air Pollution](#)

**Asked by: Drew, Dr David**

To ask the Secretary of State for Health and Social Care, pursuant to the Answer of 5 February 2019 to Question 213203 on Incinerators: Air Pollution, if he will publish the results of the developing work referred to in paragraph 15 of the paper, The Impact on Health of Emissions to Air from Municipal Waste Incinerators, published in September 2009.

**Answering member: Steve Brine | Department: Department of Health and Social Care**

Paragraph 15 of the report 'The Impact on Health of Emissions to Air from Municipal Waste Incinerators' refers to ultrafine particles. The report can be viewed at the following link:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/384592/The\\_impact\\_on\\_health\\_emissions\\_to\\_air\\_from\\_municipal\\_waste\\_incinerators.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/384592/The_impact_on_health_emissions_to_air_from_municipal_waste_incinerators.pdf)

Since this report, the reviews by the Health Effects Institute and World Health Organization of the effects of different components of air pollution, including ultrafine particles (PM<sub>0.1</sub>), concluded that there is currently limited evidence on the effects on health of ultrafine particles. These reviews can be viewed at the following links:

<https://www.healtheffects.org/publication/understanding-health-effects-ambient-ultrafine-particles>

[http://www.euro.who.int/\\_data/assets/pdf\\_file/0004/193108/REVIHAA-P-Final-technical-report-final-version.pdf?ua=1](http://www.euro.who.int/_data/assets/pdf_file/0004/193108/REVIHAA-P-Final-technical-report-final-version.pdf?ua=1)

Recent assessments have been undertaken of the health effects of long-term exposure to the air pollution mixture in the United Kingdom. This work estimated that long-term exposure to the man-made air pollution mixture in the UK has an annual effect equivalent to 28,000 to 36,000 deaths. This was based on studies reporting associations of mortality risk with fine particulate matter (PM<sub>2.5</sub>), which includes PM<sub>0.1</sub>, and nitrogen dioxide (NO<sub>2</sub>). These documents can be viewed at the following links:

<https://www.gov.uk/government/publications/nitrogen-dioxide-effects-on-mortality>

<https://www.gov.uk/government/publications/nitrogen-dioxide-effects-on-mortality>

**HC Deb 18 February 2019 | PQ 218745**

### [Recycling](#)

**Asked by: Viscount Ridley**

My Lords, does not the evidence strongly suggest that where we cannot eliminate the use of plastic we ought to incinerate it, rather than send it for so-called recycling to the Far East, where much of it ends up in rivers and thereby in the ocean?

**Answering member: Lord Gardiner of Kimble**

My noble friend is right. This is why waste incineration for energy has increased to 41.4% whereas landfill, for instance, has fallen from 79% in 2000 to 12.5% currently. We are now increasing considerably the amount of energy recovery from incineration. If it is not to be reused or recycled then this is a much better option than any of the others, including landfill.

**HL Deb 13 February 2019 | Vol 795 c1841**

### [Energy: Waste](#)

**Asked by: Sobel, Alex**

To ask the Secretary of State for Environment, Food and Rural Affairs, what recent assessment his Department has made of the environmental impact of waste to energy facilities compared to general landfill.



**Answering member: Dr Thérèse Coffey**

**| Department: Department for Environment, Food and Rural Affairs**

Defra published “Energy recovery for residual waste, a carbon based modelling approach” in 2014, which set out to identify the critical factors that affect the environmental case for energy from waste (EfW) in comparison to landfill from a carbon perspective, and the sensitivity of that case to those factors. The critical factors include the efficiency of the EfW plant; the volume and efficiency of landfill gas collection; the carbon intensity of electricity production offset by EfW and the proportions of the biogenic and fossil-derived content of residual waste. The study notes that, reducing the proportion of fossil-derived materials such as plastics going to EfW through actions such as increased recycling can improve its environmental performance relative to landfill in terms of carbon.

The study also found that, under the current waste composition, landfill would only be environmentally preferable to EfW if the EfW plant had a net electrical efficiency of 11.7%.

As set out in Defra’s 2013 paper on incineration of municipal solid waste, the typical net electrical efficiency of an incinerator only recovering electricity is 27%, further increasing with the utilisation of heat. The paper can be found

here: <https://www.gov.uk/government/publications/incineration-of-municipal-solid-waste>

The Government remains of the view that EfW is generally better than landfill in terms of environmental impact. We are in the process of developing a new Resources and Waste Strategy, which will aim to ensure we have the right mix of infrastructure for waste that maximises its value as a resource and minimises its environmental impact.

The “Energy recovery for residual waste, a carbon based modelling approach” can be found

here: <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=19019>

**HC Deb 12 February 2018 | PQ 126130**

[Incinerators: Carbon Emissions](#)

**Asked by: Drew, Dr David**

To ask the Secretary of State for Business, Energy and Industrial Strategy, what information his Department holds on biogenic CO<sub>2</sub>e emissions from waste incineration with energy recovery; and where such information is published.

**Answering member: Claire Perry | Department: Department for Business, Energy and Industrial Strategy**

Defra commissioned a report “Biodegradability of municipal solid waste” (project reference WR1003) which provides measurements of

the biogenic content of waste by mass. Waste incinerators which are in receipt of government support are required by OfGEM to either provide assessments of the biogenic content of the waste or to use a disadvantageous default value. The Defra report is available on their science and research project website:

[http://randd.defra.gov.uk/Document.aspx?Document=12266\\_WR1003BiodegradabilityofMSWReportfinal.pdf](http://randd.defra.gov.uk/Document.aspx?Document=12266_WR1003BiodegradabilityofMSWReportfinal.pdf).

Emissions from UK waste incineration are included in the UK Greenhouse gas emissions inventory annually:

[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/10116.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/10116.php).

These emissions estimates are split by biogenic and non-biogenic, however this is not possible for municipal solid waste (MSW).

Emissions from UK waste incineration, including waste incineration with energy recovery, for the years 2010-2015 were as follows:

**Million tonnes of carbon dioxide equivalent (MtCO<sub>2</sub>e)**

	2010	2011	2012	2013	2014	2015
Total UK waste incineration (includes waste incineration with energy recovery) <sup>1</sup>	2.2	2.1	2.3	2.2	2.8	3.6
Of which:						
Non-biogenic (including all MSW)	2.1	2.1	2.3	2.2	2.7	3.5
Biogenic	0.1	0.1	0.1	0.1	0.0	0.0

<sup>1</sup> Totals may not sum due to rounding

This includes emissions from methane (CH<sub>4</sub>) and Nitrous Oxide (N<sub>2</sub>O) as well as carbon dioxide (CO<sub>2</sub>) emissions.

These emissions are included in our annual submission to the UNFCCC. Waste incineration can be found in table 5 of the Convention tables on the UNFCCC website:

[http://unfccc.int/files/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/application/zip/gbr-2017-crf-13apr17.zip](http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/gbr-2017-crf-13apr17.zip)

The numbers above do not match the numbers presented in the table 5 of the Convention tables submitted to the UNFCCC as waste incineration with energy recovery is reported under the energy supply sector (table 1).

Source: [http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/10116.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/10116.php)

### About the Library

The House of Commons Library research service provides MPs and their staff with the impartial briefing and evidence base they need to do their work in scrutinising Government, proposing legislation, and supporting constituents.

As well as providing MPs with a confidential service we publish open briefing papers, which are available on the Parliament website.

Every effort is made to ensure that the information contained in these publicly available research briefings is correct at the time of publication. Readers should be aware however that briefings are not necessarily updated or otherwise amended to reflect subsequent changes.

If you have any comments on our briefings please email [papers@parliament.uk](mailto:papers@parliament.uk). Authors are available to discuss the content of this briefing only with Members and their staff.

If you have any general questions about the work of the House of Commons you can email [hcinfo@parliament.uk](mailto:hcinfo@parliament.uk).

### Disclaimer

This information is provided to Members of Parliament in support of their parliamentary duties. It is a general briefing only and should not be relied on as a substitute for specific advice. The House of Commons or the author(s) shall not be liable for any errors or omissions, or for any loss or damage of any kind arising from its use, and may remove, vary or amend any information at any time without prior notice.

The House of Commons accepts no responsibility for any references or links to, or the content of, information maintained by third parties. This information is provided subject to the [conditions of the Open Parliament Licence](#).