Department
for Environment
Food & Rural Affairs

Call for evidence on domestic burning of house coal, smokeless coal, manufactured solid fuel and wet wood

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Introduction

Many everyday activities essential for supporting lives and livelihoods can cause air pollution. The air quality impacts of driving are widely discussed and understood[1], but vehicles are not the only source of air pollution. Generating power, heating homes, industry and agriculture can all contribute, as they generate air pollutants such as particulate matter, nitrogen dioxide and sulphur dioxide.

Domestic burning of house coal, smokeless solid fuels and wood is the single largest source of harmful particulate matter ($PM_{2.5}$) emissions in the UK, at around 40%[2] of the total in 2015. This compares with industrial combustion (17%) and road transport (13%). The tiny particles in smoke can enter the bloodstream and attach to internal organs risking long term health issues as well as having more immediate impacts on some people, such as breathing problems or asthma attacks.

Burning the following domestic solid fuels leads to emissions of $PM_{2.5}$. The main solid fuels burned in the home are:

- House coal (or bituminous coal) – a naturally occurring mined product. $PM_{2.5}$ emissions are higher than from smokeless fuels.
- Smokeless coal (or anthracite) - a form of naturally occurring, mined, high-purity coal, authorised for use in smoke control areas.
- Manufactured solid fuels – fuels manufactured from coal products with other ingredients that have low smoke emissions, however some do have high SO_2 emissions.
- Wet wood – a naturally occurring product. Newly felled wood has a high moisture content and creates a lot of smoke when burned, it has over double the emissions of seasoned or kiln dried wood.
- Seasoned wood – wood that has been left for up to 2 years to naturally air dry.
- Kiln dried wood – wood that has been kiln dried to below 20% moisture.

We are considering how to encourage consumers to shift from burning the more polluting fuels such as house coal and wet wood, towards less polluting fuels such as low sulphur smokeless fuels and dry wood. This can deliver both health and economic benefits for individuals, as well as providing a more pleasant experience for consumers.

[1] The UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations, July 2017

[2] 40% is based upon the calculations in the National Atmospheric Emissions Inventory for 2015, which is the most recent year available. This data is uncertain given the difficulties in accurately estimating the extent and nature of domestic burning, however it is the best available evidence and is informed by a wide range of data sources, including data from BEIS and the stove and wood fuel industries. Of the 40% approximately 35% is domestic wood. http://naei.beis.gov.uk/data/

We are not considering banning domestic burning. The Government recognises that many households have installed wood-burning stoves, and the Government is not seeking to prevent their use or installation. But we are keen to encourage consumers to switch to cleaner wood burning, this will directly benefit consumers in their homes, as well as improving the local environment.

We are therefore considering a range of options to help reduce particulate matter emissions and improve air quality. These options include:

- Consumers who burn house coal switching to alternative fuels (e.g. low sulphur smokeless fuels).
- Consumers switching from wet wood to dry wood.
- Introduction of sulphur limits for all smokeless solid fuels.
- Provision of powers for local authorities to take action for persistent smoke offences, where local amenity is harmed.

The purpose of this Call for Evidence is to gather more information and data on the use of house coal, smokeless coal, manufactured solid fuels and wood for domestic heating as we seek to help householders make cleaner choices when using these fuels to heat their homes efficiently and reduce air pollution.

Forthcoming evidence will feed into the Government's Clean Air Strategy, which will be published for consultation in 2018. This will set out how we will work towards our international commitments and continue to deliver air quality improvements in the UK.

Domestic burning

The restoration of open fires and installations of wood-burning stoves have risen in popularity over recent years. They are now an additional form of heating for many households; for a minority they may be the sole heat source.

Burning wood has aesthetic appeal to many. By shifting to cleaner fuels and appliances, people can protect their own health, and that of their families, neighbours and communities by creating fewer particulate emissions.

For example when wet wood is burned, the heat output is significantly reduced and chemicals from the partially combusted wood build up on the inside of the stove and chimney, which increases the risk of chimney fires. High sulphur solid fuels burn at very high temperatures and can damage appliances and chimneys.

Impacts of residential emissions are generally most significant in built up areas, when combining with a range of other emissions sources. However, particulate matter emissions from solid fuel burning can be significant in rural areas too.

Emissions from domestic burning are not a new problem; the smogs[3] of the 1950s primarily related to the emissions from burning coal in UK cities from industrial and domestic premises, led to the development of the Clean Air Act and the establishing of Smoke Control Areas across the country. In Smoke Control Areas it is illegal to sell or use (burn) unauthorised fuels except if they are to be used in an exempt appliance. While domestic burning and other emissions have reduced significantly since the 1950s, the evidence on the adverse health impacts from air pollution has also grown during that time, showing that even at today's lower levels significant harm can be caused. Since 2005, we have seen an increase in the emissions from the domestic sector. We believe this is largely down to an increase in the popularity of open fires and wood-burning stoves. The purpose of this call for evidence is to raise awareness of this trend and consider the effects of possible government interventions to encourage a switch to cleaner fuels. This call for evidence is designed to improve the data available to the Government.

Through this call for evidence, we are interested in exploring how many households are burning solid fuels as either their main fuel or as a secondary fuel, the implications of any changes, and what support may be required to encourage these households to switch fuel type, in line with the Governments' policies.

Existing controls – smoke control areas

Smoke control areas are specific areas, designated by local councils, where it is illegal to allow smoke emissions from the chimney of your building. In these areas you can only burn authorised fuels or use an appliance which has been exempted for use in the area.

Anecdotal evidence would suggest that awareness of, and compliance with, smoke control area legislation in these areas is low and that many perceive the problem of domestic burning to no longer be an issue with regards to pollution.

We are interested to know if the provision of additional powers, for example to issue fixed penalty notices for persistent smoke offences, would assist local councils in increasing compliance with legislation where local amenity is harmed.

Smokeless solid fuels

In addition to house coal, smokeless coal and wood there are a number of manufactured solid fuels which are marketed as 'smokeless solid fuels'. These are manufactured using a mixture of pulverised coal, other ingredients such as waste biomass and binding agents which are re-formed into briquettes. The Clean Air Act 1993 regulates the sulphur content of smokeless solid fuels which can be used in smoke control areas to 2% sulphur. However there are a number of smokeless solid fuels which are marketed for sale outside smoke control areas and where the sulphur content can be significantly higher. High

[3] Smog is a mixture of air pollutants, originally named for the mixture of smoke and fog in the air found especially in cities, that makes the atmosphere difficult to breathe and harmful for health. We now know that smog includes a wide range of air pollutants, including smoke, gases and particulate matter.

sulphur content fuels are harmful to human health and the environment. In addition they can also cause damage to stoves and chimneys.

There is no requirement to label products with their sulphur content, therefore consumers would find it difficult to identify these when purchasing fuel, due to inadequate information at the point of sale and lack of knowledge of the harm cause. They may therefore purchase these in good faith

As government already regulates the sulphur content of all liquid fuels, we are minded to review and extend the sulphur content limit to all smokeless solid fuels to ensure that consumers don't switch from house coal to a more polluting high sulphur manufactured smokeless fuel. We are seeking views on whether there should be legislation which sets specific limits, and if so what these should be.

Anthracite is a naturally occurring, mined, high-purity form of coal, and is approved for use in smoke control areas because of low emissions of particulate matter. We are not currently seeking further evidence on the use of anthracite.

What action has already been taken?

As a first step we have been raising consumer awareness of the issue and developing quality standards for fuel; we are working with industry to launch a new industry-led 'Ready to Burn' standard for dry wood because wet wood can have over twice the emissions of dry seasoned wood.

We have also developed guidance to help inform consumers of what they can do to reduce their impact when burning solid fuels at home such as burning less often, switching to cleaner fuels or moving to a cleaner burning/more efficient appliance. We are working with Local Authorities to ensure this message is available for householders at a local level.

We have worked with chimney sweep organisations to provide advice to consumers in their own homes. They have developed an informative guide which provides clear advice on the procedures to follow when lighting a stove to minimise smoke emissions.

We welcome proactive initiatives already taken by industry such as the Ecodesign-ready brand launched earlier this year which enables consumers to identify which stoves are tested to the emissions standards of the Ecodesign provision due to be introduced in 2022.There are now over 300 Ecodesign ready stoves available and retailers are working hard to promote awareness of the benefits.

However more needs to be done if emissions from domestic burning are to be reduced.

Timing and duration of the call for evidence

The call for evidence will be published for a period of four weeks from the publication date

at: https://consult.defra.gov.uk/airquality/domestic-burning-of-wood-and-coal

You can respond using the online survey at the above link. If you would prefer not to respond online, you can respond:

By email: Air.Quality@defra.gsi.gov.uk

Or by writing to:

Local Air Quality Team
Department for Environment, Food and Rural Affairs
Area 2C, Nobel House
17 Smith Square
LONDON SW1P 3JR

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome.

Questions

We are seeking information and data on the use of house coal, smokeless coal, manufactured solid fuels and wood for domestic heating as follows:

i) House coal, smokeless coal and manufactured solid fuels

The Government is considering what further steps can be taken to encourage households away from burning solid fuels over the longer term and make a change to cleaner fuels as a stepping stone towards this goal. **This approach would see:**

- **a move away from using house coal towards using less polluting fuels in the domestic setting by only allowing the sale of low sulphur smokeless coal and solid fuel**
- **applying appropriate sulphur standards (2% or less) to all smokeless solid fuels**

Data so far suggest that this would be cost neutral to the consumer; whilst there may be a small uplift in costs to purchase cleaner fuels, they will burn more efficiently due to their higher calorific value. The background evidence document published with this call for evidence provides further information.

The Government is interested to understand the impact on businesses from a shift towards cleaner fuels, as set out above.

ii) Wood fuels

Many people are unaware that burning newly felled wood with a high moisture content ('wet wood') is not only inefficient (as the energy from the fire has to drive off all the water in the wood) but also creates more smoke and harmful particulates. Dry wood produces

less smoke and more heat when burned, and thereby provides a more pleasant experience for consumers.

As there are currently no mandatory quality or labelling standards for wood moisture content, people may also be unaware that they are buying wood that is too wet to burn straight away and requires further seasoning before use.

The Government is considering a way of reducing the use of wet wood. The solution being considered would not affect those people who have the space for large deliveries of unseasoned (wet) wood and who then season (air dry) it themselves. However, the sale of smaller quantities (more likely to be used immediately) would be limited to dry wood to ensure that people are not inadvertently burning wet wood. This would limit the harm caused to themselves, their neighbours, their stove and the environment.

We are considering limiting sales of wood to only dry wood where this is sold in smaller sizes of packaging that does not lend the wood to being seasoned before use. For instance, in packaging of up to 2m^3 (a large dumpy bag).

Section 1 – Introduction: about you

Q1. What is your name?

Q2. What is your email address?

Q3. What is your organisation:

- Academic
- Distributor e.g. retailer
- Fuel Supplier <10 employees
- Fuel Supplier 10 - 49 employees
- Fuel Supplier =>50 employees
- Householder/individual
- Industry Body
- Local Authority
- NGO - Industry
- NGO - Environmental
- Other - please specify

Q4. Would you like your response to be confidential?

- Yes
- No

Section 2 - House Coal, Smokeless Coal and Manufactured Solid Fuels - for retailers/consumers/users

Q5. The Government is seeking to build on its evidence base on the use of bituminous or "house" coal, smokeless coal and manufactured solid fuel. We welcome evidence and views from individuals and companies on the following areas:

a. How many households use house coal and/or smokeless coal and solid fuel to heat their home?
   - 0 - 99,999
   - 100,000 - 199,999
   - 200,000 - 299,999
   - 300,000 +

b. How reliant they are on these particular forms of heating?
   - Is it their primary source?
     - 0 - 24 % households
     - 25 - 49 % households
     - 50 - 74% households
     - 75 - 100% households
   - Is it secondary heating?
     - 0 - 24 % households
     - 25 - 49 % households
     - 50 - 74% households
     - 75 - 100% households

c. How many of those burning coal are from low income groups?
   - 0 - 24 % households
   - 25 - 49 % households
   - 50 - 74% households
   - 75 - 100% households

Please supply relevant evidence.

Q6. Do you have any evidence on the likely costs and benefits to consumers of:

a. switching from house coal to low-sulphur smokeless solid fuels;
b. applying sulphur standards to smokeless solid fuels.

Please supply relevant evidence.

Q7. Do you have any evidence to suggest which fuels people would switch to if they were unable to purchase house coal?
   - Kiln dried wood (i.e. below 20% moisture)
   - Seasoned wood (i.e. left to air dry for 2 years)

- Wet wood (i.e. newly felled)
- Smokeless coal or anthracite
- Manufactured solid fuels
- Gas
- Electricity
- Oil
- Other (please specify)

Q8. Do you have any evidence to suggest that limiting sales of coal products to low sulphur smokeless fuel would have a particular impact on the following groups of individuals?

a. Low income households
b. Rural dwellers
c. Urban dwellers
d. Other please specify

Please supply relevant evidence.

Q9. Do you have any evidence on potential adverse impacts to consumers or the environment of limiting sales of coal products to low sulphur smokeless fuel?

a. Yes – please supply evidence
b. No

Q10. Do you have/can you share any evidence of the volumes/locations of sales of:

a. House coal
b. Smokeless coal or anthracite
c. Manufactured solid fuel

Please supply relevant evidence.

Section 3 - Wood fuels - for retailers/consumers/users

Q11. Do you have any evidence of:

a. How many households use wood as a way of heating their home?
    - 0 - 99,999
    - 100,000 - 199,999
    - 200,000 - 299,999
    - 300,000 +

b. How reliant they are on this particular form of heating?

    i. Is it their primary source?

    - 0 - 24 % households
    - 25 - 49 % households
    - 50 - 74% households

- 75 - 100% households

ii. Is it secondary heating?

- 0 - 24 % households
- 25 - 49 % households
- 50 - 74% households
- 75 - 100% households

c. How many of those burning wood are from low income groups?

- 0 - 24 % households
- 25 - 49 % households
- 50 - 74% households
- 75 - 100% households

Please supply relevant evidence

Q12. Do you have any evidence to suggest which fuels, if any, people will switch to if they are unable to purchase smaller volumes of wet wood?

- Kiln dried wood (i.e. below 20% moisture)
- Seasoned wood (i.e. left to air dry for 2 years)
- Wet wood (i.e. newly felled) - larger volumes
- Smokeless coal or anthracite
- Manufactured solid fuels
- Gas
- Oil
- Other (please specify)

Q13. Do you have any evidence on the likely costs and benefits to consumers of switching from wet wood to dry?

Q14. Do you have any evidence to suggest that limiting sales of wood (up to $2m^3$) to only dry wood would have a particular impact on the following groups of individuals?

a. Low income households
b. Rural dwellers
c. Urban dwellers
d. Other please specify

Please supply relevant evidence

Q15. Do you have any evidence on potential adverse impacts to consumers or the environment of switching to dry wood?

a. Yes – please supply evidence
b. No

Q16. How long, in your opinion, should wood be stored for before it can be used?

a. Use immediately
b. One week
c. 3 months
d. 6 months
e. 1 year
f. longer (please specify)

Q17. Burning treated wood or waste wood such as pallets, old fence posts or furniture can emit harmful fumes due to coatings applied. From your experience, would you consider the burning of treated waste or waste wood to be a common practice?

a. Very common
b. fairly common
c. neither common nor rare
d. fairly rare
e. very rare
f. don't know

Q18. What do you feel are the main reasons why people burn treated waste wood?

a. For warmth
b. Because it is a free fuel
c. To dispose of the waste wood
d. To ensure it's put to good use/ isn't wasted
e. Because they don't know what impact it might have
f. Other (please specify)

Section 4 - House Coal and Smokeless Coal and Manufactured Solid Fuels - for suppliers - businesses

Q19. What impact would the cleaner fuels proposals have on your business?

Q20. How long would your business need to adjust:

a. My business could do it immediately,
b. it would need 1 – 2 years
c. it would need 3 – 5 years
d. it couldn't adjust
e. I don't know

Q21. Do you think there is enough capacity in the UK solid fuels market to supply enough low sulphur smokeless solid fuels, if consumers switched to these from burning house coal?

a. Yes
b. No

Please supply evidence.

Q22. What should a sulphur limit be set at?

a. 1%
b. 2%
c. other - please specify

d. don't know

Please give the reason(s) for your answer.

Q23. Do you have any evidence on the prevalence of the use of high-sulphur petroleum coke in the manufacture of solid fuels?

a. Yes – please supply evidence
b. No

Q24. Do you have any evidence on the composition of smokeless coal and solid fuels and details on the pollutants, for example, metals or polycyclic aromatic hydrocarbons (PAHs), emitted when they are burnt?

a. Yes – please supply evidence
We would particularly welcome quantitative data
b. No

Section 5 - Wood fuels - for suppliers - businesses

Q25. What impact would the wood fuels proposals have on your business?

Q26. How long would your business need to adjust:

a. My business could do it immediately
b. it would need 1 – 2 years
c. it would need 3 – 5 years
d. it couldn't adjust
e. I don't know

Q27. Do you think there is enough capacity in the UK for the sustainable kiln dried and seasoned wood fuel market to supply consumers switching from buying wet wood in quantities of under $2m^3$?

Q28. From your experience, what percentage of wood sold to domestic customers

a. in volumes less than $2m^3$ (a large dumpy bag) is:
    - wet
        - 0 - 24%
        - 25 - 49%
        - 50 - 74%
        - 75 - 100%
    - dry
        - 0 - 24%
        - 25 - 49%
        - 50 - 74%
        - 75 - 100%

b. in volumes greater than $2m^3$ is:
    - wet

- 0 - 24%
- 25 - 49%
- 50 - 74%
- 75 - 100%

- dry
  - 0 - 24%
  - 25 - 49%
  - 50 - 74%
  - 75 - 100%

Q29. We are considering a cut off of 2m^3 for the sale of wet wood to households. Do you have any evidence for or against such a cut off?
What limit do you think a cut-off should be set at?

- Bags/nets only
- Up to 1 m^3
- Up to 2 m^3
- All wet wood
- Other (please specify)

Q30. From your experience, what volume of wood sold to domestic customers can be stored away from rain/elements to ensure it remains dry?

Q31. How big do you think the wood fuels market is in terms of the volume of both wet and dry wood sold?

a. volume of wet wood sold
b. volume of dry wood sold

Section 6 - Local powers to tackle air pollution from smoke

Local authorities often receive nuisance complaints as a result of outdoor and indoor burning (for example irresponsible use of bonfires, chimineas, fire-pits, allotment fires and chimneys). This harms local amenity by creating smoke.

The Government is not seeking to hinder the routine household practices of garden waste bonfires[4] or garden barbecues, nor discourage the practice of Bonfire Night or firework celebrations.[5]

Q32. Should government consider giving powers to local authorities to issue fixed penalty notices against those responsible for creating persistent smoke pollution to the environment, where there is harm to local amenity?

a. Yes
b. No

Q33. From your experience, what duration or frequency of smoke emissions would be considered as 'persistent'?

Section 7 - General - evidence

It is difficult to precisely quantify the air quality impact of domestic burning due to a large range of uncertainties, for example: what fuel is used, how frequently people burn and what appliance, if any, is used.

The attached background document provides information about Particulate Matter emissions and sets out the Government evidence in this area so far.

Q34. Do you have any additional evidence to add to this or wish to comment on the Government's data?

Q35. Do you have other evidence that could inform Government policy? If so, please attach it here.

Section 8 - General - comments

Q36. Do you have any additional comments/views that you wish to provide on the content of this call for evidence?

[4] Other options for disposal of garden waste e.g. composting should be considered as a preferred alternative to burning. Please note burning of household waste, treated wood and waste treated with pesticides can give off toxic fumes.

[5] The Government has previously published a guide on organising safe bonfire and firework celebrations, including advice on materials which should not be burned.
https://www.gov.uk/government/publications/celebrating-bonfire-night