
SMOKING- RELATED LITTER

SECONDARY RESEARCH REVIEW

OCTOBER 2022

Proposed by:

Keep Britain Tidy, the nation's leading anti-litter charity.
Registered Charity No. 1071737.



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1. ABOUT THIS RESEARCH

The incorrect disposal of cigarette butts, and to a lesser extent, the matches, lighters and packaging associated with them, is a blight on our nation and a hazard to nature. Cigarette butts are the most littered item in the UK, and the least binned: only 13% of butts are binned and 87% dropped (average at sites where litter bins are present)[1].

Agencies, organisations and academics across the world have carried out work into cigarette litter, its location, its impact on the environment, and carried out interventions and campaigns aimed at changing littering behaviour. This is an under-represented area of study and output, most often, although not always, operating with limited funding. Very little evaluation exists on the impact of this work, particularly on longer term behavioural change.

This secondary research review, prepared solely and in confidence for the members of the CleanStreets Community Interest Company Board, sets out:

- To review existing knowledge, information and data relating to cigarette litter and what has been done to tackle it, both nationally and internationally; and
- To help to shape the primary research phase of our work; to identify knowledge gaps and opportunities for further research and potentially to inform the development of one or more targeted interventions to change cigarette littering behaviour.

The different areas of research have been identified and evaluated, and for each section there is an analysis of the knowledge gaps, and a non-exclusive list of opportunities for further research arising from these gaps. The final detail of the primary research plan, intervention trials and costings, as well as mechanisms for delivery and evaluation, will follow in due course once it has been fully assessed, developed and evaluated.



1]Keep Britain Tidy (2020) Litter Composition Analysis: Summary Report

<https://www.keepbritaintidy.org/sites/default/files/resources/20200330%20KBT%20Litter%20Composition%20Report%20-%20FINAL.pdf>

2.

EXECUTIVE SUMMARY

INTRODUCTION

This report sets out:

- To review existing knowledge, information and data relating to cigarette litter and what has been done to tackle it, both nationally and internationally; and
- To help to shape the primary research phase of our work; to identify knowledge gaps and opportunities for further research and potentially to inform the development of one or more targeted interventions to change cigarette littering behaviour.

METHODOLOGY

A desk review of existing approaches to understanding cigarette litter and its impacts across the world, together with any verifiable analysis relating to the impact of this work, set within a policy context. The following areas were examined:

- Background information: data on current smokers; trends; and the international legislative context.
- The problem: data on prevalence of smoking litter on the ground; effects of smoking litter in the wider environment.
- Behavioural research: smokers' attitudes to cigarette litter.
- Behaviour change: the approach and analysis of specific anti-smoking litter campaigns; existing interventions aimed at changing smokers' littering behaviour; options for and the effects of prosecution.

KEY INSIGHTS

Very little rigorous analysis into the effects of campaigns and interventions aimed at changing smokers' littering behaviour has been completed.

We have identified some knowledge gaps in the following areas:

- Lack of a UK-wide survey methodology to be able to understand the extent of the smoking litter problem in the country as a whole..
- Lack of knowledge about the long term and wider scale impacts of cigarette filters and the cigarette as a whole on different ecosystems and on the behaviours of the animals and plants that live in them, evidenced through more realistic types of testing.
- Understanding of smokers' actual littering behaviours, rather than those that they say that they do which are led by societal expectations.
- Ethnographic research with smokers.
- Recent UK trials of interventions.
- The impact of combining different interventions and other mechanisms such as place design, options for disposal, changed social norms and prosecution to elicit sustained behaviour change.
- Understanding of the impact of being able to recycle butts on people's littering behaviours.

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EXECUTIVE SUMMARY

Key areas for further research have been identified, and will be fully evaluated and debated before a full plan is drawn up.

These include potential to:

- Carry out further primary research into smokers and their littering behaviour, with a particular focus on observed behaviours, drivers, motivations and barriers with clear audience segmentation to inform an effective campaign strategy.
- Understand the socioeconomic and locational factors that affect littering behaviour in smokers.
- Understand the extent of smoking-related litter in the UK.
- Investigate, trial and evaluate suitable intervention options, on their own and in combination with others.
- Widen the academic debate and research into the impact of smoking-related litter on the wider environment.

NEXT STEPS

Review the opportunities for further research highlighted in this report, and draw up a primary research plan, containing details of intervention trials and costings, and mechanisms for delivery and evaluation.

This will follow in due course once it has been fully assessed, developed and evaluated.



3. BACKGROUND INFORMATION

SMOKERS IN THE UK

Number of adult tobacco smokers in the UK

The Office for National Statistics' latest data states that in the UK, in 2020[2], 14.58% of people aged 18 years and above smoked cigarettes, which equates to around 6.7 million people in the population[3].

The proportion of smokers varies between the nations, with Scotland having the highest proportion of smokers per head of population, followed by Wales, then England, then Northern Ireland:

England - 13.8% (5.5 million) adults are current smokers

Scotland – 16% (658,000) adults are current smokers

Wales – 15.3% (364,000) adults are current smokers

Northern Ireland – 13.2% (181,000) adults are current smokers

There is a sustained downward trend in the number and proportion of tobacco smokers in the UK population year on year, although the 2020 figures do show a slight increase on the 2019 figures.

The proportion of current smokers in the UK fell significantly from 14.7% in 2018 to 14.1% in 2019.

Characteristics of current tobacco smokers in the UK

Higher in men – 15.5% of UK men compared with 14.0% UK women saying they are current smokers

Highest proportion aged 25-34 (18.3%, 1.5M men / 15.4%, 1.2M women); then 18-24s (17.4%)

Lowest proportion of smokers are aged 65+ (7.4%, 860,000 people)

Varies hugely by socioeconomic classification; for example, over three times as many UK adults in routine and manual jobs are tobacco smokers compared with those in managerial and professional occupations:

- Managerial & professional occupations 8.8%;
- Intermediate occupations 15.9%;
- Routine and manual 25.2%;
- Never worked, long term unemployed and not elsewhere classified 18%.

[2] These figures are for Q1 (January – March) of 2020 only. These are directly comparable to previous years' data as they were collected before the COVID-19 pandemic changed the way that the data was collected and likely people's behaviours as well.

[3] Office for National Statistics (7th December 2021); Smoking Prevalence in the UK and the impact of Data Collection Changes: 2020 [https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/bulletins/smokingprevalenceintheukandtheimpactofdatacollectionchanges/2020#:~:text=In%20Quarter%201%202020%2C%2013.5,\(around%204.9%20million%20people\)](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/bulletins/smokingprevalenceintheukandtheimpactofdatacollectionchanges/2020#:~:text=In%20Quarter%201%202020%2C%2013.5,(around%204.9%20million%20people))

3.

BACKGROUND INFORMATION

Historic prevalence of smoking

Between 2011 and 2020 tobacco smoking prevalence has fallen in all four countries of the UK.

In 2011, tobacco smokers accounted for the following percentages of the adult population: in England, 20% of both males and females; in Scotland 20% of females and 24% of males; in Wales, 20% of females and 22% of males, and in Northern Ireland 19% of females and 20% of males

In 1974, when records began, 45.6% of the population were tobacco smokers.

KNOWLEDGE GAPS:

- Understanding of what societal and economic factors affect people's likelihood to litter their smoking materials.

POSSIBLE OPPORTUNITIES FOR FURTHER RESEARCH

- Carry out further primary research into the lives of smokers and their littering behaviour.

[4] These figures are for Q1 (January – March) of 2020 only. These are directly comparable to previous years' data as they were collected before the COVID-19 pandemic changed the way that the data was collected and likely people's behaviours as well.

[5] Office for National Statistics (7th December 2021); Smoking Prevalence in the UK and the impact of Data Collection Changes: 2020 [https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/bulletins/smokingprevalenceintheukandtheimpactofdatacollectionchanges/2020#:~:text=In%20Quarter%201%202020%2C%2013.5,\(around%204.9%20million%20people\)](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/bulletins/smokingprevalenceintheukandtheimpactofdatacollectionchanges/2020#:~:text=In%20Quarter%201%202020%2C%2013.5,(around%204.9%20million%20people))

3.

BACKGROUND INFORMATION

WIDER LEGISLATIVE CONTEXT

EU Single Use Plastics Directive

Article 8[6] of the EU Single-use Plastics Directive (SUP) requires that extended producer responsibility schemes are established for single-use plastic tobacco products with filters and filters marketed for use in combination with tobacco products.

- Applies Extended Producer Responsibility (EPR) to tobacco filters by 2025.
 - To cover the cost of clean-up and treatment of littered filters.
 - To cover the cost of awareness-raising measures and litter prevention.

EU member states have already or are currently transposing into law and implementing EPR schemes.

The UK Government has committed to meeting or exceeding the ambition of the SUP Directive.

The Litter Strategy for England states that

"[r]educing the prevalence of smoking is the most lasting way to reduce smoking-related litter".

The Strategy also notes that the trend towards smoking e-cigarettes may be *"significantly less harmful than smoking tobacco"* and that *"[e]-cigarettes are also likely to create less litter than traditional means of consuming tobacco"* [7].

Government's prevention green paper set an ambition to go 'smoke-free' in England by 2030, defined as 5% or less adult smoking prevalence, which, if achieved, would likely significantly reduce the problem.

The Government also issued an *"ultimatum for industry to make smoked tobacco obsolete by 2030"*, which once achieved *"will eliminate filter litter"*[7].

In April 2022, The Scottish Government issued a call for evidence on single use plastics, including tobacco filters.

[6] HM Government (2017); Litter Strategy for England April 2017 <https://www.gov.uk/government/publications/litter-strategy-for-england> p.32

[7] Cabinet Office and Department of Health & Social Care. Advancing our health: prevention in the 2020s – consultation document. July 2019. <https://www.gov.uk/government/consultations/advancing-our-health-prevention-in-the-2020s/advancing-our-health-prevention-in-the-2020s-consultation-document>

3.

BACKGROUND INFORMATION

OTHER LEGISLATIVE OPTIONS

Cigarette Litter Abatement Fee

In 2009, the city of San Francisco began charging twenty cents on each pack of cigarettes to help to address the clean-up costs of cigarette butt litter.

The city had conducted an extensive audit showing that the city spent approximately six million dollars that year to clean up littered cigarettes in the town and on its beaches.

Tobacco manufacturers challenged the law as an unauthorised tax rather than a fee, but it was passed. As of 1st January 2022, the Cigarette Litter Abatement Fee in San Francisco is now \$1.05 per pack.

Administration costs were estimated in 2009 to be \$880,000 per year. The spread of this approach is limited now by an initiative called Proposition 26 which was passed[8] the following year in 2010 and requires two-thirds of the voting population to approve any fee or levy in California before a local government can implement it.[9].

Deposit and return schemes

The US state of Maine considered a deposit and refund scheme for cigarette butts in 2001, similar to those for cans and bottles. A \$1 fee was to be added to each pack of 20 cigarettes, with a 5-cent refund for each butt returned. Uncollected deposit money would have funded anti-smoking education or been deposited in a fund. Ultimately, this was not adopted due to hygiene concerns about handling used cigarette butts, and lack of political support.[10]

KNOWLEDGE GAPS:

- Fully understanding of the intentions of each national government in the UK relating to this wider legislative context.

POSSIBLE OPPORTUNITIES FOR FURTHER RESEARCH

- Monitor each nation's approach to the Extended Producer Responsibility, Single Use Plastic legislation and to any other legislative opportunities.
- Continue research into single-use plastics as they relate to smoking-related litter.

[8]Passed with, as it is claimed, the assistance of a multi-industry-funded pressure group.

[9] Freiberg, Mike (2014) "(Don't) See More Butts: Preemption and Local Regulation of Cigarette Litter," Hamline Law Review: Vol. 37 : Iss. 1 , Article 6.

Available at: <https://digitalcommons.hamline.edu/hlr/vol37/iss1/6>

[10] Freiberg, Mike (2014) "(Don't) See More Butts: Preemption and Local Regulation of Cigarette Litter," Hamline Law Review: Vol. 37 : Iss. 1 , Article 6.

Available at: <https://digitalcommons.hamline.edu/hlr/vol37/iss1/>

4.

THE PROBLEM

SMOKING RELATED LITTER ON THE GROUND

National and regional picture

In the UK the presence of cigarette butts as litter is monitored in each of the nations. This monitoring is not necessarily carried out in each nation every year, and the methodology employed is very different. The data is not comparable.

England

Keep Britain Tidy's National Litter Survey of England [11] shows that cigarette butts are by far the most littered item, found on 72% of all sites surveyed.

The next most littered items are found half as frequently; confectionery packaging, found on 35.8% of all sites surveyed, and then non-alcoholic drinks related litter which is found on 33.8% of all sites surveyed[12].

Smokers' materials have been present on around 70% of all surveyed sites since 2004/05, fluctuating by approximately 3% above and below this figure over the last 17 years[13]. This is set against a steady decrease in the number of adult smokers.

The Department for Environment, Food and Rural Affairs (Defra) estimates the cost to local authorities of cleaning up cigarette litter in England to be £40 Million per year[14].



[11] Keep Britain Tidy National Litter Survey 2021/2022

[12] ibid

[13] Keep Britain Tidy National Litter Survey results (2004/5 through to 2014/15 and then 2017/18 through to 2021/22. Figures for 2015/16 and 2016/17 are not available due to funding cuts so the previous year's figures have been used)

[14] <https://www.gov.uk/government/news/government-explores-next-steps-to-clean-up-tobacco-litter-in-england>

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Scotland

Keep Scotland Beautiful bases its litter survey on at least two audits of every Local Authority in Scotland, all of which carry out the same monitoring programme, called Local Environmental Audit and Management System (LEAMS).

Their latest figures (2020/21) show that cigarette litter was by far the most common type of litter found in Scotland, found on 64% of all sites, and on 86% of all town and city sites audited.[15]

Wales

Keep Wales Tidy reports that smoking litter is found on 74.6% of Welsh Streets.[16]

Northern Ireland

Tidy Northern Ireland reported in 2019/20 on the count of packaging and non-packaging litter on Northern Ireland streets. This identified nearly 37% of all litter estimated to be on the streets at any one time to be cigarette butts.[17]

Other cigarette butt litter counts in the UK

The Marine Conservation Society holds an annual Great British Beach Clean. Data is subjective as it is calculated as an average of the metres of coastline cleared by volunteer groups during the week-long campaign in September.

The latest (2021) figures state that volunteers recorded an average of 64.2 littered butts per 100 metres in Wales; 31 butts per 100 metres in England and 9.4 butts per 100 metres in Scotland.[18]

Keep Northern Ireland Beautiful carries out a Marine Litter Survey (count of beach litter) in Northern Ireland, with a focus on plastic litter. A cigarette butt count is not included, as they are included with all other small plastic items.[19]

Other local clean-up groups also sometimes publish figures detailing the quantity and type of litter that they have collected, but this is not useable information as it is impossible to know what percentage of the total litter in any given area was collected.

[15] Keep Scotland Beautiful (2020/21) Local Environmental Audit and Management System: Report 2020/2021
<https://www.keeptscotlandbeautiful.org/environmental-services/leams/#:~:text=The%202020%2F21%20LEAMS%20audit,litter%20and%20local%20environmental%20quality.>

[16] <https://keepwalestidy.cymru/caru-cymru/issues/smoking-litter/>

[17] Keep Northern Ireland Beautiful (2020) Litter Composition Report,
<https://keepnorthernirelandbeautiful.etinu.net/keepnorthernirelandbeautiful/documents/blog-000968-20200228111517.pdf>

[18] <https://www.mcsuk.org/what-you-can-do/join-a-beach-clean/great-british-beach-clean/great-british-beach-clean-2021-results/>

[19] Keep Northern Ireland Beautiful (2020); Marine Litter Report 2020
<https://keepnorthernirelandbeautiful.etinu.net/keepnorthernirelandbeautiful/documents/008365.pdf>

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International

International beach litter counts also provide local data on cigarette butts collected by volunteers on beaches, but as above, it does not provide useable information as it is impossible to know what percentage of the total litter in any given area was collected.

Studies by the Ocean Conservancy-sponsored beach clean-ups in the USA state that cigarette butts have been the most collected item on the world's beaches, with a total of more than 60 million collected over that time, about one-third of all collected items.



KNOWLEDGE GAPS:

- No UK-wide comparable benchmark monitoring system exists for cigarette litter (or any other type of litter). Therefore, no data is currently available to understand the extent of cigarette butts or cigarette-related litter in the UK.
- Inherent inaccuracies in the multitude of citizen-collected data.

POSSIBLE OPPORTUNITIES FOR FURTHER RESEARCH

- A UK-wide, statistically sampled, survey of the presence and quantity of different types of smoking related litter.
- Better understanding of factors that are known to affect propensity to smoke which include deprivation, land use types and how urban an area is, should be carefully examined any such survey.

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THE PROBLEM

EFFECTS OF SMOKING RELATED LITTER ON THE WIDER ENVIRONMENT

Cigarette butts are small and difficult to pick up. When discarded directly onto the ground or into a watercourse, if not subsequently collected, they remain in the natural environment. Some remain on land; others are blown and/or washed into freshwater, through drains, rivers or other watercourses and many will arrive (through this route, or by being deposited directly) in the marine environment. There is growing interest amongst what is currently quite a small group of academics (as well as significant interest from pressure groups and national governments) in the impact of these butts, specifically the materials they contain, on plant and animal life, as well as on the water itself.

Key areas of study:

The impact of cigarette butts as single use plastics

Cigarette butts contain a non-biodegradable plastic filter made of cellulose acetate, which is based on plant-derived cellulose treated with acetic acid, converted into a plastic by industrial processes[20]. Over time, these break down into microplastics. Modelling studies analysed by Anglia Ruskin University[21] estimate this breaking down to take around 14 years in an aquatic environment; longer on land.

There is a growing international call to push for legislation to ban current mass-produced acetate filters because they are a single-use plastic, or make manufacturers responsible for the full life cycle costs of the product through extended producer responsibility.

The impact of the rest of the cigarette

In addition, the butt itself, which is on average 1.8cm long in a discarded cigarette, “contains polycyclic aromatic hydrocarbons (PAHs), metals, phthalates, nicotine, and volatile organic compounds, which can be released as leachate in water”[22].

Studies[23] show that the effects appear to be more severe in aquatic systems compared with terrestrial environments, perhaps due to the slower release of toxicants in terrestrial environments. However, to date, only 36 academic studies have been undertaken to examine the environmental toxicity of cigarette butts, 26 in aquatic environments (of these 15 freshwater, seven marine, and four covering both freshwater and marine) and ten terrestrial-only.

The potential for biodegradable or reuseable filters to replace single-use filters

They argue that this might drive the cigarette industry into exploring more seriously other options such as biodegradable filters (one certainly is commercially available, Greenbutts (www.greenbutts.com), or reuseable filters.

[20] Green, D., Tongue and Boots (2022); The Ecological Impacts of Discarded Cigarette Butts; Trends in Ecology & Evolution TREE 2198 Cell Press

[21] Ibid. p.1

[22] Ibid. p.2

[23] ibid

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In addition, a company in Mexico, Ecofilter[24], claims to have discovered a fungus that breaks down cellulose acetate into cellulose pulp, which enables it to be recycled into good such as notebooks, pencils, flowerpots and other objects.

Recently published and peer reviewed work on this topic:

Green, D., Tongue and Boots (2022); The Ecological Impacts of Discarded Cigarette Butts; Trends in Ecology & Evolution TREE 2198 Cell Press

Curtis, C., Novotny, T. E., Lee, K., Freiberg, M., & McLaughlin, I. (2017). Tobacco industry responsibility for butts: a Model Tobacco Waste Act. Tobacco control, 26(1), 113–117. <https://doi.org/10.1136/tobaccocontrol-2015-052737>

Novotny TE. (2019); Environmental accountability for tobacco product waste; Tobacco Control 2020;29:138–139. <https://tobaccocontrol.bmj.com/content/tobaccocontrol/29/2/138.full.pdf>

Van Schalkwyk, MCI., Novotny TE., McKee, M. (2019); No More Butts; BMJ 2019;367:l5890 <https://www.bmj.com/content/367/bmj.l5890>

Hoek, J., Gendall, P., Blank, M-L., Robertson, L., Marsh, L (2019).; Butting out: an analysis of support for measures to address tobacco product waste; BMJ 2019:0549561 <https://tobaccocontrol.bmj.com/content/29/2/131>

Wallbank LA, MacKenzie R, Beggs PJ (2017); Environmental impacts of tobacco product waste: International and Australian policy responses. Ambio. 2017;46(3):361-370. doi:10.1007/s13280-016-0851-0

KNOWLEDGE GAPS[25]:

- Better understanding of how toxic cigarette butts and associated substances are for aquatic biota.
- The impacts cigarette butts have on the functioning and resilience of ecosystems.
- How long cigarette butts remain toxic for after being discarded.
- The effect on population dynamics and species diversity.
- Currently a very limited understanding of the impact of cigarette butts in terrestrial systems (plants, vertebrates and invertebrates).
- The impact of chemicals from all of the cigarette – plastic filter, ash, remnant tobacco, microfibrils and leachate.
- Need greater understanding of the effect of other filter options – biodegradable cellulose instead of cellulose acetate, as well as reusable filters.
- Study design – run more environmentally realistic experiments in relation to exposure duration, contaminant concentration and flow-through systems for biota in moving water.
- Understanding of how smoking related litter travels through drains and beyond; how it behaves as a visible floating litter object in water courses.
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[24] Philip Morris International (17 May 2022); Partnering up to tackle the littering problem through innovation in Mexico: A case study from PMI's Integrated Report <https://www.pmi.com/sustainability/case-studies/partnering-up-to-tackle-littering-problem-through-innovation-in-mexico>

[25] Taken primarily from the published analysis into this subject by Green, D., Tongue and Boots (2022); The Ecological Impacts of Discarded Cigarette Butts; Trends in Ecology & Evolution TREE 2198 Cell Press

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POSSIBLE OPPORTUNITIES FOR FURTHER RESEARCH:

- To match-fund a PhD position to examine the accumulations and effects of cigarette butts in the marine environment.
- To conduct a global DELPHI survey to consult with specialists and academics around the world on this issue and potential solutions. This work will be pivotal in informing the campaign and also the innovation phase of the project.
- To undertake research into the effects of other filter options: biodegradable cellulose, cellulose acetate, as well as reusable filters, and to understand the associated impacts of each on individuals' littering behaviour.
- To investigate the through-flow of smoking related litter items into drains and beyond.



5. BEHAVIOURAL RESEARCH

SMOKERS' ATTITUDES TO CIGARETTE LITTER

Without doubt the best way to reduce smoking litter on the ground and its subsequent effects is for people not to drop it in the first place. Everyone has a choice in how to dispose of their cigarette butt.

Over time, people's perception of littered cigarette butts has changed. They were originally seen as being dirty and untidy; recently they have been reframed as an economic and environmental issue where the risk of fire (particularly acute in some countries), cost of cleaning up, and potential for harm to the natural environment and especially to marine life, in leaching toxins and breaking down into microplastics.

Keep Britain Tidy research measured the impact of a recent anti-littering campaign which focused on the effect of cigarette litter on marine animals. Post-campaign research with smokers indicated that 83% of those who didn't already bin their butt said that the campaign was likely to encourage them to use a bin[26].

Research with smokers and non-smokers in New Zealand[27] identified that as knowledge of cigarette butt non-biodegradability increased, so too did the proportion of individuals that held the tobacco companies, rather than smokers, responsible for tobacco waste.

Attitudes to cigarette litter in the UK

- 11% of smokers do not consider cigarette butts to be litter.
- 52% of smokers who smoke everyday thought putting a cigarette down the drain was acceptable.[28]
- 83% of adults hate to see cigarette butts left on the street
- 84% of adults think an area looks dirty if they see cigarette butts outside a bus station, train station or in the high street.[29]

The first Scottish Litter Survey, published in 2021 by Keep Scotland Beautiful, examined Scots' attitudes to litter and who was responsible for it. The study reported that cigarette butts were perceived by members of the public to be the third most frequently littered item in their local area.

Over 50% felt that levels of cigarette butt litter had remained about the same; around 20% that it had got more (somewhat or much more) common, and around the same amount that it had got somewhat or much less common in the past 12 months.[30]

[26] Keep Britain Tidy (2018) #BinTheButt Campaign in Manchester: Evaluation Report #BinTheButt | Keep Britain Tidy

[27] Hoek, J., Gendall, P., Blank, M-L., Robertson, L., Marsh, L (2019).; Butting out: an analysis of support for measures to address tobacco product waste; BMJ 2019:0549561 <https://tobaccocontrol.bmj.com/content/29/2/131>

[28] Keep Britain Tidy (2018) #BinTheButt Campaign in Manchester: Evaluation Report #BinTheButt | Keep Britain Tidy

[29] Keep Britain Tidy (2022) Baseline Attitudinal Study into Smoking Related Littering, unpublished, YouGov 24th-26th May 2022

[30] Keep Scotland Beautiful (2021); The Scottish Litter Survey: A baseline assessment of public perceptions and attitudes towards litter and littering behaviour <https://www.keepsotlandbeautiful.org/media/1568594/littering-in-scotland-survey-2021-final-071221.pdf>

5. BEHAVIOURAL RESEARCH

Keep Britain Tidy carried out qualitative research[31] in 2005 and 2013 to try to understand the triggers and barriers to smokers of getting rid of their cigarette butts:

- Many smokers that wouldn't litter other items do litter cigarettes.
- These smokers understand that dropped cigarette butts are litter, but they were treated differently because they are small, on fire, smelly, often perceived as biodegradable and are frequently seen on the ground littered by others.
- Smokers agreed that in order to encourage responsible disposal of cigarette butts, cigarette bins should be dedicated exclusively to cigarettes (to reduce the perceived risk of fire), be easy and quick to use, and show no visible evidence of cigarette ends.
- Smokers identified poor provision of bins as a major reason for littering their cigarette butts. They were unlikely to walk far in order to find one. Previous Keep Britain Tidy research indicates that people are unlikely to walk further than 12 metres to find a general litter bin.

- Smokers' disposal behaviour depended to a certain extent on their frame of mind 'can't be bothered', 'drunk', and for a few, the weather.

In 2018[1], smokers were asked about the last time they had carried out various behaviours:

- 58% of smokers admitted to disposing of cigarette butts in the streets within the last month.
- 43% admitted to dropping a cigarette down the drain within the last month.
- 38% admitted to flicking a cigarette into the gutter within the last month.

Academic research done in 2011[33], also identified that cigarette butts were more likely to be littered than most other items, due to a personal burn risk, because they did not know what else to do with them, and a distinction made by smokers about the perceived acceptability of littering butts compared with other rubbish.



[31] Keep Britain Tidy (2022) Baseline Attitudinal Study into Smoking Related Littering, unpublished, YouGov 24th-26th May 2022.

[32] Keep Britain Tidy (2018) #BinTheButt Campaign in Manchester: Evaluation Report #BinTheButt | Keep Britain Tidy

[33]Smith EA, Novotny TE. (201); Whose butt is it? Tobacco industry research about smokers and cigarette butt waste, Tobacco Control. 2011;20:i2-i9. doi: 10.1136/tc.2010.040105.

5. BEHAVIOURAL RESEARCH

KNOWLEDGE GAPS:

- Most of the existing research is based on stated behaviours which change according to what people think they should do or what they should say, rather than on observed actual behaviours, and does not provide a true picture of people's littering actions.
- Limited understanding of the variety of smokers in the UK, who they are, what they really think and how they feel.
- Limited knowledge of socioeconomic settings of UK smokers and how their personal circumstances affect their littering behaviour.

POSSIBLE OPPORTUNITIES FOR FURTHER RESEARCH

- Observational research of smokers' disposal behaviours in different settings.
- Smokers' diaries.
- Other qualitative research to elicit real responses.
- An up-to-date quantitative study to give a baseline reading into people's attitudes towards littering of smoking-related materials based on socioeconomic and attitudinal factors.

6. BEHAVIOUR CHANGE

SPECIFIC ANTI-SMOKING LITTER CAMPAIGNS

In the past ten years especially, several countries have run anti-smoking littering campaigns. Using the learning that people are concerned about the effect of cigarette butts on marine life, this has been a key feature of recent campaigns. The only available campaign effectiveness analysis available is from Keep Britain Tidy.

Keep Britain Tidy 2018 #BintheButt

This campaign was developed by Keep Britain Tidy for local authorities. They can order posters and a media pack to run in their own authority.

The campaign was launched in Manchester and analysis of smokers' and non-smokers' attitudes to littering was monitored before and after the campaign[34].

The level of unacceptability for cigarette littering behaviours increased post campaign:

- Around three quarters (77%) initially thought that it was unacceptable for smokers to dispose of a cigarette on the street, rising to 93% post campaign;
- 77% felt that flicking a cigarette butt into the gutter was unacceptable, which increased to 87% post campaign;
- 70% thought putting a cigarette butt down the drain was unacceptable, rising to 84% post campaign.



[34] Keep Britain Tidy (2018) #BinTheButt Campaign in Manchester: Evaluation Report #BinTheButt | Keep Britain Tidy



- The proportion of smokers that considered dropping a cigarette on the street as a littering behaviour increased from 84% pre campaign to 95% post campaign.
- Awareness that cigarettes dropped in the street can get blown or washed into drains increased from 28% pre campaign to 37% post campaign.
- Awareness that cigarette butts which get into the sea can release chemicals harming or killing marine life also increased; 43% agreed with the statement pre campaign, increasing to 57% post campaign

Smokers were asked about the last time they had performed three different cigarette littering behaviours. The proportion of smokers admitting to the behaviours within the last month decreased after the campaign:

- In the pre-campaign survey, 58% of smokers admitted to disposing of cigarette butts in the streets within the last month. This decreased to 45% in the post campaign survey.
- 43% admitted to dropping a cigarette down the drain within the last month, which decreased to 36%.
- 38% admitted to flicking a cigarette into the gutter within the last month, which dropped to 33%'

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Keep Scotland Beautiful – Bin your Butt campaign

Keep Scotland Beautiful has run two campaigns specifically aimed at tackling cigarette litter.

One ran on a street in the middle of Edinburgh, which was busy during the day and at night time. The aim was to reduce the amount of cigarette litter on Rose Street by changing public behaviour and making it easy for people to do the right thing. Free portable ashtrays were also distributed from participating pubs and bars. Posters and images on beer mats were used in 16 participating pubs and bars along Rose Street to promote an anti-litter message and encourage people to pick up a free portable ashtray; over 500 were given out over a six-week period.

No campaign analysis is published, except to say that an overall decrease in the volume of litter was recorded over the project duration.[35]



[35] <https://www.keepsotlandbeautiful.org/about-us/our-campaigns-and-innovations/no-butts-on-rose-street/>

[36] Denmark's plastic littering mapped out in world-first project (thelocal.dk)

[37] Action on Smoking and Health (ASH); March 2021; Evidence into Practice: Motivating quitting through behaviour change communications <https://ash.org.uk/wp-content/uploads/2021/03/Communications-Evidence-Into-Practice.pdf>

[38] Brown, J, Kotz, D, Michie, S, Stapleton, J, Walmsley, M, West, R. How effective and cost-effective was the national mass media smoking cessation campaign 'stoptober'? Drug and Alcohol Dependence 2013; 135: 52-58

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3929003/> Relative to other months in the year, more people tried to quit in October in 2012 compared with 2007–2011 (OR = 1.79, 95%CI = 1.20–2.68). In 2012 there was an approximately 50% increase in quitting during October compared with other months of the same year (9.6% vs. 6.6%; OR = 1.50, 95%CI = 1.05–2.15), whereas in 2007–2011 the rate in October was non-significantly less than in other months of the same period (6.4% vs. 7.5%; OR = 0.84, 95%CI = 0.70–1.00). Stoptober is estimated to have generated an additional 350,000 quit attempts and saved 10,400 discounted life years (DLY) at less than £415 per DLY in the modal age group.

Denmark awareness campaign

In Denmark an awareness-raising campaign was staged where oversized cigarette butts were left on a beach. No analysis of this campaign is available.



Effective campaigning to smokers

The papers overleaf all contain analyses of the effectiveness of campaigns aimed at smokers, all promoting a behaviour change to give up smoking. In summary:

- Behaviour change communications offering specific actions are the most effective ways to promote smoking cessation in smokers[37]. A study of the public health campaign 'Stoptober' showed that relative to other months in the year, more people tried to quit in October in 2012 compared with 2007–2011; and in October 2012 there was a 50% increase in quitting during October compared with other months of the same year [38].

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- Fiscal measures combined with television advertising also changed behaviour, with an Australian study showing that increases in the costs of a pack of cigarettes by 0.03% of gross average weekly earnings, combined with being exposed to televised anti-smoking advertisements an average of 4 times per month, had an effect. Anti-smoking laws in restaurants were not found to have an effect on reducing smoking[39].

Research into campaigns aimed at smokers

Jepson R, Harris FM, Rowa-Dewar NJ, MacGillivray S, Hastings G, Kearney N, Walker S & Glanville J (2007) A review of the effectiveness of mass media interventions which both encourage quit attempts and reinforce current and recent attempts to quit smoking. NICE Public Health Guidance.
<http://www.nice.org.uk/guidance/index.jsp?action=download&r=true&o=34644>

Wakefield, M.A., Durkin, S., Spittal, M.J., Siahpush, M., Scollo, M., Simpson, J.A., Chapman, S., White, V., and Hill, D.; (2008) Impact of Tobacco Control Policies and Mass Media Campaigns on Monthly Adult Smoking Prevalence
<https://pubmed.ncbi.nlm.nih.gov/18556601/>

Langley, T., Lewis, S., McNeill, A., Gilmore, A., Szatkowski, L., West, R., & Sims, M.; (2013); Characterizing tobacco control mass media campaigns in England. *Addiction* (Abingdon, England). 108. 10.1111/add.12293.

Brown, J, Kotz, D, Michie, S, Stapleton, J, Walmsley, M, West, R. How effective and cost-effective was the national mass media smoking cessation campaign 'stoptober'? *Drug and Alcohol Dependence* 2013; 135: 52-58
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3929003/>

Action on Smoking and Health (ASH); March 2021; Evidence into Practice: Motivating quitting through behaviour change communications <https://ash.org.uk/wp-content/uploads/2021/03/Communications-Evidence-Into-Practice.pdf>

KNOWLEDGE GAPS:

- Reference the knowledge gaps in behavioural insights section above; need to understand actual behaviours, motivations and barriers relating to smokers' littering.
- Lack of thorough and broad ranging audience insight.

POSSIBLE OPPORTUNITIES FOR FURTHER RESEARCH

- Qualitative ethnographic research, examining smokers' actual behaviours, societal and environmental factors that affect these behaviours in relation to littering. As detailed already in the behavioural insights section above.
- Full audience insight, tested campaigns and ongoing analysis of relevance.

[39] Wakefield, M.A., Durkin, S., Spittal, M.J., Siahpush, M., Scollo, M., Simpson, J.A., Chapman, S., White, V., and Hill, D.; (2008) Impact of Tobacco Control Policies and Mass Media Campaigns on Monthly Adult Smoking Prevalence
<https://pubmed.ncbi.nlm.nih.gov/18556601/> Reviewed monthly population survey data measuring smoking prevalence from 1995 to 2006. Time-series analysis of televised anti-smoking advertising in Australia, combined with sales of nicotine patches and smoke free restaurant laws.

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INTERVENTIONS

A few interventions have been trialled across the world to use the principles of behavioural science to make it easier, more pleasant and more opportune to bin cigarette butts rather than litter them.

They have taken the following forms, often in combination:

- Design and location of a designated smoking site (smoking zones).
- Design and location of fixed receptacles for cigarette litter, either bins and ashtrays or portable options.
- Legislative options.
- Recycling of butts.

Design and location of sites for smoking - smoking zones

The idea of smoking zones, which started in Denmark, was to design a place for smokers to be able to smoke and dispose of their cigarettes correctly. It was intended to be somewhere that they would naturally be funnelled towards when they came out of the smoke-free building and where it would be the easiest and most pleasant option for them to take to smoke and dispose of their cigarettes.

They are now quite commonly found in transport hubs, particularly where people have been travelling in a smoke free environment for a long time, for example in airports and train stations, and basic shelters are available outside many buildings with significant footfall, but little evaluation of their impact on smokers' disposal behaviour is available.

Keep Britain Tidy Smoking Zones 2015

In 2015 Keep Britain Tidy trialled an intervention with Euston Station and Cambridge City Council to establish the effectiveness of a dedicated smoking zone just outside a public area where smokers had been in a non-smoking environment for a while. The EAST behavioural framework was adopted to ensure that the Zones were:

1. **Easy** to use;
2. **Attractive** catching smokers' attention;
3. **Social** the more smokers that used the zones, the more likely others were to follow; and
4. **Timely** located near to the exits of the buildings where smokers were already known to congregate.

The robust monitoring and evaluation of smokers' behaviours in the target sites was crucial to measuring the impact of the intervention. Monitoring was conducted as follows:

- Behavioural observations at the target sites for two weeks before the intervention, two weeks immediately after the zones were put in place and six weeks after the zones had been installed.
- Intercept interviews with users of the sites before the intervention and after the intervention was installed.

Findings showed a 39.9% reduction in cigarette butts littered at London Euston immediately after the intervention, and 28.9% remaining six weeks later. Over the first three weeks after the installation of the smoking zones, the proportion of cigarette littering behaviours observed decreased by 36.11% across the experiment sites compared to the three weeks of baseline monitoring, indicating that overall the smoking zones experiment was effective in reducing cigarette littering behaviours.

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- 91.9% of smokers inside the smoking zones used bins and only 8.1% littered their cigarettes compared to 28.8% of people outside the smoking zones who used bins and 71.2% who littered. This represents a reduction of 89% in cigarette littering when smokers are inside the zones.
- Of people observed inside the zones, three behaviours were classified as 'other': two smokers pocketed their cigarette and one person gave the cigarette to someone else. Outside the smoking zones, 23 people's behaviours were classified as 'other': ten smokers stubbed/disposed of their cigarettes inside an item of litter and left the item behind; five smokers pocketed their cigarettes; four smokers put their cigarette on top of a non-smoking bin; four smokers gave their cigarettes to someone else to finish or dispose.
- The smoking zones were effective in reducing littering behaviours of smokers even when people were standing outside the smoking zones (although as expected, not as effectively as those smoking inside the zones). Before the intervention, 82.3% of people littered their cigarette butts compared to 71.2% of people outside the smoking zones during the intervention phases. This difference is statistically significant and represents a 13.5% reduction in littering behaviours.

Bin design

Keep Britain Tidy[40] has carried out research into the type of bin or ash tray that is most appealing to smokers. Results showed that in order to be attractive to use:

- Ashtray-type receptacles should have a cigarette stub plate; ingress for the cigarettes should not be too fiddly; big enough and well serviced so that they were not messy and unpleasant to use and no ash got on to users' fingers.
- Standard waste bins should have an ashtray (stub plate) top that was clearly visible from a distance away. These plates should be kept clean, as above.
- The preference was for dedicated cigarette bins with no flaps, large enough to hold a high volume, easy and clean to use with large holes.

Keep Britain Tidy's Smoking Zones research led to the development of new bins in partnership with manufacturers Glasdon that were designed to meet smokers' requirements. They were bright yellow in colour, had small openings big enough to easily dispose of cigarettes, whilst avoiding the risk of touching others' discarded butts. They were specifically for disposing of cigarettes, to tackle the excuse that a butt could cause a fire if discarded amongst general waste.



[40] Keep Britain Tidy (2005) Smoking Related Litter Research (unpublished)

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USA Surfriders butt tidy

The USA's Surfriders' Oceans Foundation have several "Hold on to your Butt" campaign schemes running on the West Coast beaches where sponsored post-mounted butt bins are provided in busy areas.

These 'Community Ash Cans' are fixed to posts to encourage people to bin rather than litter their butts. No analysis is made of the effectiveness of the campaign.



Personal Ashtrays

A number of initiatives and campaigns around the world have sought to encourage smokers to hold onto their cigarettes whilst 'on the go' until they can dispose of them correctly by giving them or asking them to pick up or apply by text or online for a personal ashtray. These are either soft foil pouches or harder plastic and aluminium canisters that are sealable and hold the ash and butts of approximately five cigarettes. They are intended for temporary use whilst out of home.

England

Keep Britain Tidy ran trials of personal ashtrays^[41] in 2005. Qualitative research pre-trial indicated that smell, risk of fire and having another thing to carry about would put users off using one. One was a soft foil pouch that could also be used for gum; and the other was a solid plastic container. Respondents were incentivised to trial both ashtrays for a week and fed back their comments.

Subsequently a selection of 10 (five male and five female) respondents were interviewed over the telephone to add depth to the findings.

Eight out of ten respondents said they were still using their preferred portable ashtray following the trial, although a couple noted that they kept it for emergencies, in the car, or when they were feeling too 'lazy' at home to get another ashtray.

Women were more likely than men to use a portable ashtray in different situations. Men were more likely than women to feel silly (21% vs 12%). Both reported a fire concern with the soft pouch, that you were not sure it was completely extinguished. The plastic box was seen to be too fiddly. Cleanliness was regarded as a problem, particularly in the soft pouch. Thirty-seven percent of male respondents said they would only use a portable ashtray if it was free of charge, compared with 21% of females.

[41] Keep Britain Tidy (2005) Smoking Related Litter Research (unpublished)

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Scotland

Keep Scotland Tidy have run two campaigns in the major cities of Edinburgh and Glasgow, where posters and beer mats raised awareness of cigarette litter and 10,500 butt tidies were distributed over the two campaigns. There is no published evaluation of the impact of this approach on smokers' littering behaviour nor on litter on the ground.



Other trials

In 2020, the cigarette manufacturers JTI carried out research with 1,000 adult smokers into why they wouldn't use existing pocket ashtrays, and their research found that 83% said that they would use one if it fitted more seamlessly into their everyday life.

Using this insight, they developed their #IGiveAButt Stub Tidy. Their research identified that 10% of their respondents already used a stub tidy; 64% of them generally used a metal container and 20% used a plastic pouch, 13% used a keyring container, and the rest used a combination of reused receptacles.

Nearly four in ten respondents said that they wouldn't use one because of the smell that would stay with them; followed closely by having to carry another thing around (38%); the hassle (29%) and the fact that they are unsightly (26%). Smokers did want to be able to replace their stub tidy after an average of 5.6 days, but this was seen as an unsustainable solution and was disregarded.

Stub Tidies were designed and an undisclosed number were given out for trial. Eight hundred and forty recipients of the Stub Tidy responded to the survey. The report does not make it clear what proportion this is of the total given out, nor how trial participants were selected. Ninety percent of respondents said that the design of the Stub Tidy worked for them; 61% of respondents stopped throwing cigarette butts on the floor; 68% used it every day; and 97% found it important that the Stub Tidy was designed to be more sustainable.

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EFFECTIVENESS OF COMBINING STRATEGIES AND INTERVENTIONS

Effective strategies to reduce cigarette butt litter: New South Wales (NSW), Australia

In 2017 the New South Wales Environment Protection Authority (EPA) began working with 16 NSW councils to develop and lead a partnership programme, guided by social scientists, to explore ways of influencing smokers' cigarette butt disposal behaviour[42]. Combinations of up to four strategies were trialled by different councils and careful observations were made of littering and binning behaviours and litter.

The four strategies Trialled were:



Pathways – creating the best environment for smokers to correctly dispose of their butts by placing signs on butt bins and stencils on the ground to create pathways to the location of butt bins.



Pride and Ownership (P&O) – encouraging smokers to develop a sense of pride in, and ownership of, the area as a comfortable and welcoming place for smokers, thereby creating a commitment to bin their butts.



Positive Social Norming (PSN) – encouraging smokers to believe it is expected that smokers using the area will dispose of their cigarette butts in the bins provided; calling on smokers to act responsibly, reinforcing positive feelings they get from disposing correctly and meeting a target of zero butt litter for the location.



Enforcement – raising the risk attached to littering by drawing smokers' attention to fines; boosting patrols with rangers (enforcement officers) speaking to smokers in the locations to increase the rangers' visibility; and providing an incentive not to litter based on avoiding a penalty, with the option to move on to "hard enforcement" that involves issuing infringement notices to smokers who litter

Of the four strategies, the Pathways (smoking zone) strategy was regarded by authorities as the easiest and most cost-effective to set up. Higher binning rates were observed; increasing from 38% to 58% combined for the four strategies – an overall 53% improvement in binning rates from benchmarks as a result of interventions.

Generally, after six to eight weeks of interventions, peak impacts were recorded that lifted binning rates across the four strategies to 67%, representing a 76% improvement from benchmark levels:

- Building a sense of pride and ownership (P&O) took time to build engagement, but once established, it showed continued improvements to become the most effective strategy
- P&O locations had the largest improvement in weekly binning rates that jumped in week 6 from 31% at benchmark to 76%, increasing the proportion of butts being binned by 144%.
- The effectiveness of the P&O strategy for influencing butt-binning was shown at all site types. This included office blocks, where the biggest impact was recorded and 79% of smokers were binning butts. Outcomes in other site types were shops (69%) and transport (67%).
- Other strategies were not as effective as P&O in these site types. Demographic features associated with smokers' disposal actions, including smoker gender, age, the composition of smoker groups, or the percentage of smokers in a location, did not affect strategy outcomes.

[42] NSW EPA (2019); Identifying effective strategies to reduce cigarette butt litter: Findings from the NSW EPA-led Cigarette Butt Litter Prevention Trial <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/litter/19p1840-butt-litter-trial-report.pdf>

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- Similarly, the distance smokers were from a bin when littering was similar for all locations and strategies, so the further away from a bin, the less likely the smoker was to use it. The littering behaviour of smokers who continued to litter butts shifted during the trial. It went from attempting to be more discreet during active delivery, to be more blatant at follow-up after the interventions were no longer active.

Separately, it was found that:

- Building a sense of pride and ownership (P&O) had the biggest effect on cigarette butt-binning behaviour, achieving a 64% binning rate. It took longer to build engagement, but once established it showed continuous improvements to become the most effective strategy, at all site types.
- Enforcement was the next most effective, with a 62% binning rate (although this was not sustained).
- Pathways and Positive Social Norming (PSN) strategies were less effective (53% and 58% binning rates) than P&O.

At follow-up, the impacts of strategies showed:

- Improved binning rates were sustained for three strategies: P&O, PSN and Pathways.
- Binning rates fell from 62% to 50% in enforcement locations, where only half of the smokers observed were binning their butts.

Advice for Local Authorities on effective cigarette bin strategy

In 2007, Keep Britain Tidy (then branded ENCAMS) authored a report for the Department for Environment, Food and Rural Affairs offering guidance on preventing cigarette litter in England [43].

Based on the 2005 research into smokers' triggers and barriers in choosing how to dispose of their butts, it gave advice on types of bins, their placement, signage, cleansing. It also included a strategy for campaigning, and options for prosecution.

This is no longer on the Defra website but is available through Keep Britain Tidy. We do not know how widely it was used, nor whether any effectiveness of implemented strategies was measured.

Recycling cigarette butts

The recycling company, TerraCycle[44], offers cigarette recycling in the USA and Canada, funded by an industry partner. Butts are collected in receptacles or sent in directly to TerraCycle by individuals. This initiative, although once running in the UK, is not currently available here.

[43] ENCAMS & Defra (2007); Preventing Cigarette Litter in England: A Guide for Local Authorities https://www.keepbritaintidy.org/sites/default/files/resources/KBT_Preventing_Cigarette_Litter_in_England_2007.pdf

[44] www.terracycle.com

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There does not appear to be any research into whether it changed the behaviours of litterers and reduced cigarette litter; whether those that littered their butts were the ones who instead chose to recycle them.

Another recycling company, EcoFilter, offers cigarette recycling in Mexico, also funded by a member of the tobacco Industry. Cigarettes are collected as part of an awareness-raising campaign into cigarette litter, and are recycled by a fungus that breaks down cellulose acetate into cellulose pulp in approximately one month under the right conditions. According to the case study, the fungus frees the cellulose pulp from toxins, enabling it to be recycled [45]. No further analysis of this approach is available.

KNOWLEDGE GAPS:

- Recent studies of interventions and their effectiveness in the United Kingdom
- Fully evaluated studies of interventions and their effectiveness, especially over time.
- Understanding the impact of combining different interventions in the United Kingdom to promote sustained behaviour change.
- Understanding of the impact of being able to recycle butts on people's littering behaviours.

POSSIBLE OPPORTUNITIES FOR FURTHER RESEARCH

- Identify a range of interventions and carry out interventions with smokers to understand better what works for them in reducing cigarette littering.
- Work with local authority and other land managers (e.g. transport providers) to continue to test and evaluate the organisation of place to stimulate smoking related litter binning rather than littering actions.
- Test the impact of combining interventions to promote behaviour change.

[45] Philip Morris International (17 May 2022); Partnering up to tackle the littering problem through innovation in Mexico: A case study from PMI's Integrated Report <https://www.pmi.com/sustainability/case-studies/partnering-up-to-tackle-littering-problem-through-innovation-in-mexico>

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PROSECUTION

UK Legislation

Littering is an offence under s.87 of the Environmental Protection Act 1990. It is an offence to throw down, drop or otherwise deposit, and then leave, litter in any place in the area of a principal litter authority which is open to the air on at least one side, and if the public has access to it, with or without payment. The Act states that it is immaterial whether the litter is deposited on land or in water.

Section 27 of the Clean Neighbourhoods and Environment Act 2005 inserted a new section 5A into the 1990 Act so as to clarify that 'litter' includes the discarded ends of cigarettes, cigars and the discarded remains of other products designed for chewing'.

A person found guilty of the litter offence may be fined up to level 4 on the standard scale (currently £2,500) in a magistrates' court, but much more commonly section 88 of the 1990 Act allows an authorised officer of a litter authority to issue fixed penalty notices, currently set at £150, as an alternative to prosecution.

Keep Britain Tidy research[46] shows that smokers were divided on whether they were worried or not about the possibility of being fined £150 for dropping a cigarette butt. Fifty-two percent of smokers stated that they were worried and 42% that they were not. Those smoking more than twenty cigarettes per day were most likely to be concerned about being fined for littering (57%), compared with 33% not concerned.

Data is not available centrally to know how many Fixed Penalty Notices are issued for cigarette littering in England or the United Kingdom.

The intervention trial in New South Wales, Australia, showed that over time, cigarette butt binning rates fell from 62% to 50% in enforcement locations, where only half of the smokers observed were binning their butts. They also reported high levels of unhappiness amongst smokers and even a violent incident towards a ranger when issuing fines for cigarette littering.



[46] Keep Britain Tidy (2022) Baseline Attitudinal Study into Smoking Related Littering, unpublished, YouGov 24th-26th May 2022

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KNOWLEDGE GAPS:

- The effects of prosecution on smoking related littering behaviour in the United Kingdom in the short and long term.
- Effective mechanisms for identifying and issuing fixed penalty notices to perpetrators.
- Cost benefit analysis of increasing prosecution for smoking related littering.
- Understanding each nation's approach to legislative opportunities.

POSSIBLE OPPORTUNITIES FOR FURTHER RESEARCH

- Identify and trial effective approaches to prosecution for smoking related littering using different methods of observation and surveillance, as well as suitable awareness-raising mechanisms, and evaluate effect on littering behaviour in the short and long term.
- Develop a cost benefit analysis of these methods.
- Understand what elements local authorities would need in order to be able to carry out an effective prosecution campaign and develop suitable tools to support them; monitor and evaluate effectiveness.
- Seek to test and understand the role of prosecution within a wider smoking related litter intervention strategy.



7.

SUMMARY OF FINDINGS

Here follows a combined summary of identified knowledge gaps and suggested possible opportunities for further research arising from each section of this secondary research review.

BACKGROUND INFORMATION: SMOKERS IN THE UK

Knowledge gaps:

- Understanding of what societal and economic factors affect people's likelihood to litter their smoking materials.

Possible opportunities for further research

- Carry out further primary research into the lives of smokers and their littering behaviour.

BACKGROUND INFORMATION: INTERNATIONAL LEGISLATIVE FRAMEWORK

Knowledge gaps:

- Full understanding of the intentions of each national government in the UK relating to this wider legislative context.

Possible opportunities for further research:

- Monitor each nation's approach to the Extended Producer Responsibility, Single Use Plastic legislation and to any other legislative opportunities.
- Continue research into single-use plastics as they relate to smoking-related litter.

THE PROBLEM: SMOKING RELATED LITTER ON THE GROUND

Knowledge gaps:

- No UK-wide comparable benchmark monitoring system exists for cigarette litter (or any other type of litter). Therefore, no data is currently available to understand the extent of cigarette butts or cigarette-related litter in the UK..
- Inherent inaccuracies in the multitude of citizen-collected data.

Possible opportunities for further research:

- A UK-wide, statistically sampled, survey of the presence and quantity of different types of smoking related litter.
- Better understanding of factors that are known to affect propensity to smoke which include deprivation, land-use types and how urban an area is, should be carefully examined any such survey.

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SUMMARY OF FINDINGS

THE PROBLEM: EFFECTS OF SMOKING RELATED LITTER ON THE WIDER ENVIRONMENT

Knowledge gaps[47]:

- Better understanding of how toxic cigarette butts and associated substances are for aquatic biota.
- The impacts cigarette butts have on the functioning and resilience of ecosystems.
- How long cigarette butts remain toxic for after being discarded.
- The effect on population dynamics and species diversity.
- Currently a very limited understanding of the impact of cigarette butts in terrestrial systems (plants, vertebrates and invertebrates).
- The impact of chemicals from all of the cigarette – plastic filter, ash, remnant tobacco, microfibrils and leachate.
- Need greater understanding of the effect of other filter options – biodegradable cellulose instead of cellulose acetate, as well as reusable filters.
- Study design – run more environmentally realistic experiments in relation to exposure duration, contaminant concentration and flow-through systems for biota in moving water.
- Understanding of how smoking related litter travels through drains and beyond; how it behaves as a visible floating litter object in water courses.

Possible opportunities for further research:

- To match-fund a PhD position to examine the accumulations and effects of cigarette butts in the marine environment.
- To conduct a global DELPHI survey to consult with specialists and academics around the world on this issue and potential solutions. This work will be pivotal in informing the campaign and also the innovation phase of the project.
- To undertake research into the effects of other filter options: biodegradable cellulose, cellulose acetate, as well as reusable filters, and to understand the associated impacts of each on individuals' littering behaviour.
- To investigate the through-flow of smoking related litter items into drains and beyond.

[47] Taken primarily from the published analysis into this subject by Green, D., Tongue and Boots (2022); The Ecological Impacts of Discarded Cigarette Butts; Trends in Ecology & Evolution TREE 2198 Cell Press

7.

SUMMARY OF FINDINGS

BEHAVIOURAL RESEARCH: SMOKERS' ATTITUDES TO CIGARETTE LITTER

Knowledge gaps:

- Most of the existing research is based on stated behaviours which change according to what people think they should do or what they should say, rather than on observed actual behaviours, and does not provide a true picture of people's littering actions.
- Limited understanding of the variety of smokers in the UK, who they are, what they really think and how they feel.
- Limited knowledge of socioeconomic settings of UK smokers and how their personal circumstances affect their littering behaviour.

Possible opportunities for further research:

- Observational research of smokers' disposal behaviours in different settings.
- Smokers' diaries.
- Other qualitative research to elicit real responses.
- An up-to-date quantitative study to give a baseline reading into people's attitudes towards littering of smoking-related materials based on socioeconomic and attitudinal factors.

BEHAVIOUR CHANGE: SPECIFIC ANTI-SMOKING CAMPAIGNS

Knowledge gaps:

- Reference the knowledge gaps in behavioural insights section above; need to understand actual behaviours, motivations and barriers relating to smokers' littering.
- Lack of thorough and broad ranging audience insight.

Possible opportunities for further research:

- Qualitative ethnographic research, examining smokers' actual behaviours, societal and environmental factors that affect these behaviours in relation to littering. As detailed already in the behavioural insights section above.
- Full audience insight, tested campaigns and ongoing analysis of relevance.

BEHAVIOUR CHANGE: INTERVENTIONS

Knowledge gaps:

- Recent studies of interventions and their effectiveness in the United Kingdom
- Fully evaluated studies of interventions and their effectiveness, especially over time.
- Understanding the impact of combining different interventions in the United Kingdom to promote sustained behaviour change.
- Understanding of the impact of being able to recycle butts on people's littering behaviours.

Opportunities for further research:

- Identify a range of interventions and carry out interventions with smokers to understand better what works for them in reducing cigarette littering.
- Work with local authority and other land managers (e.g. transport providers) to continue to test and evaluate the organisation of place to stimulate smoking related litter binning rather than littering actions.
- Test the impact of combining interventions to promote behaviour change.

7.

SUMMARY OF FINDINGS

BEHAVIOUR CHANGE: PROSECUTION

Knowledge gaps:

- The effects of prosecution on smoking related littering behaviour in the United Kingdom in the short and long term.
- Effective mechanisms for identifying and issuing fixed penalty notices to perpetrators.
- Cost benefit analysis of increasing prosecution for smoking related littering.
- Understanding each nation's approach to legislative opportunities.

Possible opportunities for further research:

- Identify and trial effective approaches to prosecution for smoking related littering using different methods of observation and surveillance, as well as suitable awareness-raising mechanisms, and evaluate effect on littering behaviour in the short and long term.
- Develop a cost benefit analysis of these methods.
- Understand what elements local authorities would need in order to be able to carry out an effective prosecution campaign and develop suitable tools to support them; monitor and evaluate effectiveness.
- Seek to test and understand the role of prosecution within a wider smoking related litter intervention strategy.

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