



Impact Assessment-
Concerning the proposal to introduce new BSS
Requirements for suitable carbon monoxide
alarms on all classes of boat with
accommodation spaces

August – November 2018

1. Intervention & Options

1.1 What is the problem under consideration and the purpose of the proposals?

1.1.1 In the past two years new information about the potential risk to boaters presented by carbon monoxide (CO) has brought the need for action into focus.

From the recent evidence collected, people and their pets aboard their own boats are at medium risk of CO poisoning from sources of CO generated outside of the boat by others e.g. the use of engines and appliances on adjacent boats.

1.1.2 The risk is enhanced by the fact that CO is a hidden danger.

1.1.3 The introduction of CO alarms on all boats with accommodation spaces will help ensure that the CO poisoning risk to boat owners is as low as reasonably practicable.

1.2 What are the intended effects?

1.2.1 The proposed changes to Boat Safety Scheme (BSS) requirements are intended to help prevent CO poisoning of people and their pets aboard boats from sources of CO generated by the activity of others.

1.2.2 Only boats subject to the BSS will be affected, namely around 70,000 vessels on the UK's inland waterway network.

1.2.3 The enhanced protection will also help protect first-responders / emergency services, BSS Examiners or other workers on, or in the immediate vicinity of boats.

1.2.4 The additional recognised benefit beyond the regulatory target are a) the anticipated effectiveness of CO alarms in preventing death or injury to boat owners placed at risk in their own boats from running the boat's engines or appliances and b) to make craft occupants aware of moderate levels of CO which can be a long-term threat to health if left undetected.

1.3 What policy options have been considered?

1.3.1 Three options have been considered: do nothing, introduce a BSS Advice check, rely upon co-ordinated campaigning.

1.3.2 'Do nothing' – this was considered but rejected as the evidence collected during the development of the BSS Risk Review and Assessment Paper is compelling and the BSS and Navigation Authorities would be exposed if no regard was paid to the evidence, and if the BSS disregarded the advice from its stakeholders who strongly support the proposals.

1.3.3 Introduce BSS 'Advice Checks' – considered inappropriate because the risk falls within the criteria for mandatory BSS Requirement checks, i.e. the protection of boat owners from the activity of others. Please note that one Advice check is proposed acting as a recommendation for a CO alarm to be placed in the same space as any installed solid fuel stove.

1.3.4 Introduce mandatory new BSS Requirements [Preferred option] - the risk falls within the criteria for mandatory BSS Requirement checks, the risk review supports this outcome and this option has full support from all BSS stakeholder groups.

1.4 When will the implemented policy be reviewed

1.4.1 The monitoring of the actual costs and benefits, and the achievement of the desired effects, will be carried out quarterly and annually. Monitoring takes place through the engagement with stakeholder committees. The BSS Technical Committee will monitor the risk-picture impacts. Any unexpected cost and operation impacts will be monitored by the BSS Advisory Committee, made up of 18 stakeholder organisations.

2. Analysis and Evidence

2.1 Costs and benefits of introducing the proposals

2.1.1 Who will be affected and how? The impact will fall on the owners and operators of all boats with accommodation spaces used on the inland waterways, specifically those waterways controlled by navigation authorities that have adopted the Boat Safety Scheme.

2.1.2 It does not affect the owners or operators of vessels without accommodation spaces, such as open day boats.

2.1.3 Other groups affected include:

- the navigation authorities who have adopted the Boat Safety Scheme concerning their enforcement role;
- BSS Examiners for training in the proposed changes;

- chandlery and online shops selling CO alarms, in-house fitters or those marine service agents contracted in by owner/operators;
- insurance providers concerned with insuring inland waterway vessels.

2.1.4 Only the costs concerning the preferred option are provided, because:

- all boat owner and marine trade representative bodies, whose membership are subject to the proposed new BSS Requirements, strongly support the proposals;
- the cost burden associated with the proposals is seen as entirely proportionate to the risk benefits gained;
- the risk benefits of the proposals are potentially extremely significant.

2.1.5 It is proposed to achieve the objectives by introducing four mandatory new BSS Requirements for suitable carbon monoxide (CO) alarms in good condition and in suitable locations on all classes of boat with accommodation spaces from 1 January 2019 [the details are available to view and download from the dedicated consultation website www.boatsafetyscheme.org/alarmconsultation2018]. The proposals are considered essential to support the purpose.

2.1.6 The proposed new BSS Requirements will follow most of the criteria of the existing hire boat requirements for CO alarms where solid fuel stoves are installed, namely:

- Carbon monoxide alarms must be marked as being certified by an accredited certification body to EN 50291 or equivalent.
- Carbon monoxide alarms must be wall-mounted at high level at least 150mm below the ceiling height.
- Alarms must be provided with a test function button.

2.1.7 The following assumptions are presented:

- 70,000 boats are subject to the BSS and 38% do not have a CO alarm = 26,600 boats affected.
- Each alarm costs £13.51 inc. VAT, being the minimum price of BS EN 50291-2 CO alarm at today's market prices. The maximum price likely to be found is £50. (A list of alarm models provided by the alarm industry association, CoGDEM, as tested to BS EN 50291-2 and suitable for boat use, is published here <https://www.boatsafetyscheme.org/media/294453/boat-co-alarms-may-18.pdf>)
- One alarm is generally sufficient to meet the BSS minimum safety requirement. However, two or more may be required if separate accommodation spaces are separated by doors and are more than 10m from an alarm.

- d. Each alarm will have a life of seven years dependent upon battery health. Devices generally have a seven or ten-year life and a very few have five-year life.
- e. No installation costs for private craft are taken into account because, as an optional securing method, alarms can be secured in position using strong sticky pads.
- f. The estimated 62% of boats with existing CO alarms will mostly have alarms that will be compliant with the proposed new BSS requirement.

2.1.7 The following costs are estimated:

- a. Additional costs to owners/operators of affected privately owned and non-private boat classes - £354,046 (26,600 boats x £13.51 each boat), this could equate to a minimum outlay per boat of £1.93 per year over seven years.
- b. Focussing on hire operators specifically, it is estimated that there are currently around 2400 boats registered for weekly hire and 840 day-boats¹. It is estimated that CO alarm uptake is already high at around 75-80%. For hire boats with solid fuel stoves the requirement became mandatory from April 2017. Also, for example, the two biggest inland hire boat companies are known to have successfully introduced CO alarms throughout their fleet. The boats affected will be all of the weekly hire boats yet to have installed a CO alarm and a small proportion of the day boats, estimated at 700. £9,457 (700 boats x £13.51 each boat), this could equate to an outlay of £1.93 per year over seven years.
- c. Additional costs to the owners of other classes of non-private boats subject to the BSS. These are the workboats, hotel boats, floating cafes, etc, estimated at around 700 boats. It is estimated that CO alarm uptake will likely be already high at around the levels of private boat CO alarm ownership. £3,594 (266 x £13.51 each boat), this could equate to an outlay of £1.93 per year over seven years.
- d. It is anticipated that operators of the non-private classes of boat will want a more robust form of attachment beyond the use of sticky tabs. Costs are estimated at a minimum charge of £8.50 and a maximum cost of £21. Hire boats - £5950 (700 boats at £8.50). Other classes of non-private boats – £2261 (266 x £8.50).
- e. The operators of classes of non-private boats will have additional costs associated with routinely testing the functionality of each device and in explaining to customers about CO and what to do if the alarm activates.
- f. For organisations and individuals operating non-private classes of vessel registered with the Environment Agency, it should be noted that if the Agency is considering a change to its policies, processes or practices that have a significant financial impact on

¹ [Based upon Hirer Safety Review data - Nov-13.pdf](#)

business, the Government's Accountability for Regulatory Impact scheme requires the Agency to undertake a formal Business Engagement Assessment and consult the affected business sectors. This proposed change to the BSS requirements applies to all classes of commercial vessel subject to the Scheme's requirements. The BSS considers that the overall financial impact of the changes that we propose are insignificant. Notwithstanding this view, commercial operators are asked to make known any alternative view by providing comments into the public consultation. Your input will help the Environment Agency to decide on the need to proceed with a formal Business Engagement Assessment for these proposals.

- g. Additional BSS Examiner charges for their boat owners/operator customers? – it is possible that examiners will charge more for the added time taken to carry out the additional checks. Examiners operate in a free market regarding their charges and so no estimate can be provided.
- h. Additional costs to the BSS administration – no additional costs, only normal operating costs in support of consultation, implementation, promotion and review.
- i. Additional costs to BSS Examiners – it is intended that training to the proposed new checks will take place during the compulsory other training prior to implementation as a part of their routine training commitment. As such there is regarded to be no additional cost to BSS Examiners.
- j. Additional cost to navigation authorities - Direct cost to the Navigation Authorities may arise from any need to further consult, amend of registration, licensing or other conditions and any information to reflect the change in requirements.

2.1.8 The following benefits are identified

- a. Full adoption of the proposals would see necessary and proportionate risk controls introduced to help ensure that the CO poisoning risk to boat owners is as low as reasonably practicable.
- b. The risk presented to boat occupants from outside sources of CO is considered to be a medium potential risk (fatalities are possible, but unlikely within 15 years). Introducing CO alarms combined with an effective influencing-behaviour campaign reduces risk to 'as low as reasonably practicable'. There is no data concerning serious injuries recorded, but the sensitivities are such that lower level exposure to CO is often undiagnosed. There is a newly identified risk and the proposals are proportionate to it.
- c. The evidence concerning sources of CO from inside the boat is clearer, with ten² boat-related CO fatalities in the last five years. The additional recognised benefit of

² Six on inland waterways and four on cabin cruisers at coastal locations. Note that two further fatalities occurred on a coastal fishing vessel during this period.

introducing CO alarms on boats is the protection it affords boat owners in this respect. The introduction of CO alarms is expected to have a significant impact on the boater-fatality rate; provided effective awareness campaigning is maintained.

As far as serious injuries are concerned, again there is little data. Another recognised benefit is that craft occupants become aware of moderate levels of CO which can be a long-term threat to health if left undetected. A study undertaken by BSS Examiners indicates that around 300 boats will be found with concentrations of CO at 20+ ppm in air and around 33 boats will have levels above 100 ppm each year.

- d. The benefits also apply to boat crews and could potentially apply to third parties such as first-responders or BSS Examiners.
- e. Implementing the recommendation will likely help prevent CO poisoning fatalities and injuries to tenants and those who have recently chosen to live aboard and who may be in the 'hard to reach' or 'vulnerable' categories. It could be that these groupings are more exposed to the CO risk, perhaps through their lack of boat dwelling experience and lack of control over the maintenance and replacement of appliances.
- f. The effectiveness of CO alarms is estimated at 90%. This figure takes account two important points, firstly that no CO fatalities are known to have occurred on a boat on which a working CO alarm was fitted. Secondly, there is a high level of confidence about the quality and robustness of the devices meaning that CO alarms will be effective at detecting CO throughout their working life. The 10% ineffective estimate concerns a small proportion of boaters who may not use alarms appropriately, i.e. may not replace the alarm when the battery expires etc, or a fail to act upon an alarm activation, including any victims affected by drugs or alcohol.
- g. Incident records show that in the majority cases of fatal fire and CO incidents on boats, the chances of survival would have been potentially improved if suitable working smoke and CO alarms had been installed on those boats. The Chief Inspectors of the Marine Accident Investigation Branch (MAIB) have made such recommendations repeatedly.

2.2 Consultation with small business

2.2.1 British Marine representing the major part of the marine industry's small businesses, have been well represented and taken an active part in the substantial BSS Committee discussions on the proposed changed requirements. British Marine are fully supportive of the proposals.

2.2.2 The majority of affected boats operated by small business will already comply.

2.3 Competition Assessment

2.3.1 The proposals will not affect competition in the broader business sector.

2.4. Enforcement and sanctions

2.4.1 The Boat Safety Scheme does not enforce compliance with the requirements for vessels using inland waterways. It provides a standards-making and verification service to the Navigation Authorities who have the powers, duty and responsibility for enforcement.

2.4.2 Depending upon how the BSS is accommodated by an individual navigation authority, the BSS requirements represent the law, or conditions under which a licence/registration or other permission to use a vessel is issued or withdrawn. In most cases failure to support an application for a licence/registration or other permission with a BSS Certification will result in the permission being refused or withdrawn.

3 Further information

Further information about the proposed changes is contained within the main consultation document and within the Risk Review and Assessment Paper - See link on the consultation main page www.boatsafetyscheme.org/alarmconsulation2018.

The contact point, concerning this Impact Assessment is:

Graham Watts, BSS Manager

Boat Safety Scheme

First Floor North

Station House

500 Elder Gate

Milton Keynes, MK9 1BB

Email: BSS.enquiries@boatsafetyscheme.org

Phone: 0333 202 1000