



## **Boat Safety Scheme (BSS) Response**

**Consultation on proposals to introduce new  
BSS Requirements for carbon monoxide (CO)  
alarms on boats with accommodation spaces  
August – November 2018**

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## Section 1 – Foreword and introduction

The Boat Safety Scheme (BSS) ran a public consultation on proposals that have the full support of its stakeholder and management committees.

The proposals are to introduce mandatory BSS Requirement for suitable carbon monoxide (CO) alarms in good condition and in suitable locations on all classes of boat in scope of the BSS Requirements with accommodation spaces.

The consultation covered all classes of BSS examination, private boats, boats used for hire and other non-private boat classes.

The BSS believes the proposals are both necessary and proportionate risk controls and is grateful for all the submitted comments. The consultation ran from 17 August to 9 November 2018.

## Section 2 – Background to the consultation

### 2.1 What is CO and why is avoiding CO poisoning essential?

CO is a highly poisonous gas that weighs about the same as air.

It is produced when carbon-based fuels used in engines and appliances, such as gas, LPG, coal, wood, paraffin, oil, petrol and diesel don't burn completely.

It can build-up on a boat with one, or a mix of these factors; faulty, badly maintained, or misused appliances; exhaust fumes from a boat's engine or generator; escaped flue gases from solid fuel stoves; shortage of oxygen - fuels need the right amount of air supply to burn completely.

It cannot be seen, smelt, tasted, or felt, (it's known as the silent killer) and only suitable CO alarms can warn of its presence reliably.

In humans and pets, CO replaces the oxygen in the bloodstream, preventing essential supplies to body tissues, hearts, brains and other vital organs. At high concentrations, CO can kill without warning, sometimes in only minutes.

Where victims survive severe CO poisoning, they can be left with long-term brain damage such as poorer concentration, or causing mood swings, etc.

Exposure to CO over a longer period, can also result in serious effects such as memory problems and difficulty concentrating.

Some people will be affected much more quickly, including: pregnant women and unborn babies; babies and young children; older people; people with respiratory problems or heart conditions.

Other people may be at higher risk too, such as those who have been doing something active and are breathing more rapidly and deeply and have a greater need for oxygen. People who have been drinking heavily may also miss early signs of problems because the symptoms may be masked.

More on CO its causes, its effects and how to prevent it can be found at [www.boatsafetyscheme.org/co](http://www.boatsafetyscheme.org/co)

### 2.2 Why now were mandatory new BSS Requirements being considered?

In the past two years new information about the potential risk to boaters presented by 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.

The recently identified potential risk cannot be controlled by boat owners themselves. The risk is enhanced by the fact that CO is a hidden danger.

The circumstances fall within the remit of the Scheme to have in place measures that protect boat owners from the activity of others. In these circumstances a mandatory new BSS Requirement is warranted, as opposed to an 'Advice check'.

A detailed assessment of the risks was carried out through the BSS support committees and the supporting detailed risk review report is available on the BSS website CO Alarm consultation pages.

However, it is important to stress that an essential part of owning a boat is both understanding and then addressing any risks that could arise, including CO. An understanding of CO should prevent misuse of alarms. The BSS will continue to work with partner organisations to promote education and awareness about CO, its causes, how to avoid CO and recognising the symptoms of CO poisoning.

### **2.3 About the responses**

This publication considers the specific comments made during the consultation in the context of the questions asked.

In total 259 responses were received, including 7 by email; none were received by post.

To make the response more readable and cohesive we have taken a collated approach to some of the comments. There were many with common or related themes. Where this has happened, we have paraphrased the points to get to the essence of the issue or issues in the comments.

The BSS office has drawn on the Risk Review and Assessment Paper (RRAP), the original consultation document, discussions at the BSS Advisory Committee and BSS Technical Committee and additional information drawn from our competent advisors to for draft responses to those comments.

## **Section 3 – Conclusion and decisions**

The BSS Management Committee has considered recommendations from the BSS Advisory and BSS Technical Committees, which also looked at responses to this consultation.

It has concluded that new BSS Requirements for carbon monoxide (CO) alarms on all boats in scope BSS Requirements with accommodation will be introduced from next April.

It noted there was strong support for the changes demonstrated in the responses to the consultation with 84% in favour of introducing a requirement for suitable working carbon monoxide (CO) alarms. It also has asked the BSS Technical Committee to consider responses pointing to the need for further clarification particularly concerning the placing and number of alarms needed.

The checks, with any revised wording to ensure that the requirements are entirely clear, will be published in late January or early February 2019.

Mandatory checks will then start in April 2019 for suitable CO alarms in good condition and in appropriate locations. The requirements are designed to keep people on and around boats safe.

As well as protection from neighbouring boats, the CO alarms are also expected to prevent death or injury to boat owners from their own boat engines or appliances.

The alarms will warn people in the area about immediately dangerous levels of CO. They can also alert craft occupants to moderate levels of CO, which can be a long-term threat to health if left undetected.

The BSS Committees want to thank all the contributors to the consultation. The comments and views have been exceptionally valuable and have caused us to reflect a little longer before publishing the checks in order.

It is encouraging that so many contributors already enjoy the protection of CO alarms, however if you are yet to be protected, please see the list of CO alarms recommended as suitable for boats by the manufacturers' body on the BSS Stay Safe pages: [www.boatsafetyscheme.org/co-alarm-advice](http://www.boatsafetyscheme.org/co-alarm-advice)

## Section 4 – Responses to the consultation

### Q1 – Do you support the general concept of introducing a requirement for suitable working carbon monoxide (CO) alarm(s) because of the now known third-party risk?

**Overall results:** 218 agree (84.2%) and 41 disagree (15.8%)

While there was very strong support for the consultation proposals with comments suggesting the respondents were very pleased it was being proposed, some saying they found it reassuring and other wondering why it had not happened earlier.

From the other perspective around half of the people who disagreed made comments.

**‘Nannyism’ and overbearing regulation:** Just over half of the 40 people against the implementation of the proposals commented that it was the principle of the nanny state, too many regulations and that the BSS had changed position and is now proposing to regulate on first party issues. Many of these comments were from people who thought alarms are a good idea but thought that it should be an owner’s decision to be protected by them.

**BSS:** The BSS stakeholders on the BSS Committees understand that the issue of creeping unnecessary regulation must be guarded against, however in this matter of protecting people from outside sources of CO over which they have no control is considered critical and the BSS promoted these proposals based on the recent and growing evidence pointing to the need to act.

**Questioning consistency of examiners:** Three respondents thought that examiners will not deliver a consistent approach and, that the check as written allows too much Examiner subjectivity. Another person did not think examiners would be able to recognise suitable alarms.

**BSS:** There will be full training of examiners. The training will be built on the successful training of the examiners for the CO alarm requirements introduced for hire boats with solid fuel stoves in 2017. The implementation of those requirements has been reviewed and considered in detail over the past 18 months. No issue has arisen in the examiners undertaking those checks. Monitoring of the effectiveness and consistency of approach of examiners will continue after implementation.

**Costs:** Two responses mention cost of alterations to interior boat structures.

**BSS:** No internal alterations will be required to meet compliance and CO alarm protection.

Other costs related to the alarms are covered in the section dealing with Question 4 below.

One person saw it as a money-making enterprise (assumed to mean examiners then selling CO alarms at above market prices).

**BSS:** We believe the ease with which suitable alarms can be obtained (see Question 4 below) installed ahead of any regulations should mean that there will be no risk in this matter, although we will be watchful for any early indications of such things happening.

**Boats in scope:** The scope of the proposals was questioned by two persons who pointed out that their boats had accommodation spaces but no fuel burning engines or domestic equipment.

**BSS:** This risk addressed is associated with CO entering the boat from outside sources. It follows that the lack of fuel burning appliances on the boat the subject of the CO alarm requirement, is not a risk mitigation.

**Supportive comments:** The same number of people commented in general support of the proposals (just under 10 percent of people in support) as those who commented in general against the regulations. In their view it was unquestioningly the right idea and long overdue. Several

respondents included examples where CO alarm activations had informed them of the presence of carbon monoxide which they were subsequently able to resolve by taking immediate action.

**BSS:** The BSS has been concerned that any regulatory change is evidence-led and believe that both the need is now here and that the timing is correct as the evidence started to grow from late spring in 2017.

### Q2 - Do you agree that the Check A is supportable

**Overall results:** 198 agree (76.5%), 26 agree but suggest amendments (10%), 29 disagree (11.2%), 6 DNA\* (2.3%) \*(where DNA appears in this document, this stands for did not answer)

A	If the vessel has an accommodation space, are the correct number of carbon monoxide alarms provided?	Requirement
Identify the presence of an accommodation space.		All boats having an accommodation space must be provided with at least one carbon monoxide alarm.
If present, check for the presence and location of carbon monoxide alarm(s).		Where the accommodation space is sub-divided by cabins with door(s), a CO alarm must be located within 10m of each cabin door.
Applicability – where the accommodation space is not sub-divided by cabins with door(s) only one carbon monoxide alarm is required irrespective of the size of the space.		
Guidance for owners – follow the carbon monoxide alarm manufacturer’s placement and other instructions.		

**Placement of alarms:** There were 29 responses to this question that either commented on or ask clarification for, the numbers of alarms and/or the placement of alarms in various parts of various designs/types of boats. Many of the comments refer to specific circumstances.

**BSS:** There are three objectives in this check. Firstly, and obvious, is to ensure there is at least one CO alarm aboard. Next there should be enough alarms to sense the CO as it disperses through the interior, and just as critically, they must be audible to the occupants.

We are further reviewing the comments against the proposed checks in respect of the correct numbers of alarms relevant to the intricacies and complexities craft interiors.

We understand the need to the requirement to be effective and the check to be clear and comprehensible to both boat owners and examiners.

### Q3 – Do you agree that the Advice Check B is supportable

**Overall results:** 207 agree (79.9%), 25 agree but suggest amendments (9.7%) 22 disagree (8.5%), 5 DNA (1.9%)

B	If the vessel has overnight accommodation and an installed solid fuel stove, is a carbon monoxide alarm provided within the same space as the solid fuel stove?	Advice*
If the vessel has overnight accommodation and one or more solid fuel stove appliances are installed, check for the presence of a carbon monoxide alarm within the same space(s) as the stove(s).		All boats having overnight accommodation and an installed solid fuel stove appliance(s) must be provided with a carbon monoxide alarm within the same space(s) as the solid fuel stove(s).  Within each overnight accommodation space separated from the space containing the solid fuel stove by a door(s) and being greater than 10m distance from the carbon monoxide alarm, an additional carbon monoxide alarm must be provided, located in the “breathing zone”, i.e. near to a bed head.

Applicability – the provision of a carbon monoxide alarm(s) in support of the requirement at Check B. does not have to be in addition to the provision at Check A. Depending on configuration of the accommodation spaces (see 2<sup>nd</sup> requirement at Check A) one correctly located alarm might be all that is required to comply with Checks A and B.

Guidance for owners – follow the manufacturer’s placement instructions. Ideally, where a solid fuel stove appliance is installed, a CO alarm should be located between 1m and 3m (on plan view) from any stove and not directly above sources of heat or steam.

**Change the status of this check to ‘Requirement’:** The focus of suggested amendments to Check B were to suggest that this check should be mandatory.

**BSS:** The view of the BSS is that this check is important but protects only the occupants of a boat cabin. In that respect the BSS considers this should be an Advice Check on privately owned and managed boats. It will continue to be mandatory on hire boats and a requirement on non-private boats.

#### Q4 – Do you agree that the Check C is supportable

**Overall results:** 198 agree (76.5%), 30 agree but suggest amendments (11.6%) 25 disagree (9.7%), 6 DNA (2.3%)

C	Are carbon monoxide alarms correctly mounted and of a suitable type?	Requirement
Where one or more carbon monoxide alarms have been found to be necessary at Checks A and/or B, check the mounting position of each required alarm.	Carbon monoxide alarms must be wall-mounted at high level, but must be at least 150mm below the ceiling height.	
Check the markings on each required carbon monoxide alarm.	Carbon monoxide alarms must be marked as being certified by an accredited third-party certification body to EN 50291 or equivalent.	
Identify the test function button.	Carbon monoxide alarms must be provided with a test function button.	

Applicability – the main accredited third-party certification bodies in the UK are BSI and LPCB. For the following makes of carbon monoxide alarm accredited third-party certification can be assumed – Ei Electronics, Fire Hawk Alarms, Honeywell, Kidde, First Alert, Fire Angel, BRK and Dicon. For other makes, removing the alarm from its base may be necessary to view labels and approval marking on the base. Permission for removal should be sought from the owner/operator. Documentary evidence of accredited third-party certification is acceptable.

Applicability – CO alarms may be mounted outside of the range specified in the requirement (... At high level, but must be at least 150mm below the ceiling height) where any such alternative location is permitted by the alarm manufacturer and where appropriate supporting documentary evidence is available. In cases where alarms are mounted outside of the range specified in the requirement, examiners are recommended to make a note of the alarm make and model and the supporting documentation in their field notes.

Guidance for owners – carbon monoxide alarms marked to the ‘EN 50291-2’ are the best choice for boats. They have been tested to meet the more onerous conditions found in recreational vehicles, including boats.

**Specification and cost:** A significant number of the people who provided comments referred to the specification of CO alarms related to price, availability or performance.

**BSS:** Our advisors at CoGDDEM had advised us that EN 50921 is an acceptable standard as a minimum while promoting alarms certified to the standard EN 50921-2 as the optimum for boats.

Regarding the EN standard, it is a UK and European government wide recognised standard that offers protection to their citizens

Accredited certification organisations such as BSi and LPCB give the additional assurance about performance and reliability.

These alarms have widespread availability across the retail sector from chandlers to supermarkets, independent hardware high street shops, DIY chain-stores, electrical retailers, builders' merchants, specialist safety sector online suppliers and the major online shopping outlets. Prices currently start at around £10 and go up to around £30 for alarms with standard features including digital displays. Alarms certified as meeting EN 50921-2 are readily available from around £13 in December 2018.

There are some fire and rescue services providing suitable CO alarms to liveaboard boaters free of charge usually linked to specific campaigns or boat fire safety checks.

All these alarms are for the general market and not marine-only use and their prices will likely only be affected by general market conditions and retail inflation.

**Dual or multiple sensor alarm:** How can dual smoke/CO or Smoke/CO/Flammable Vapour alarms be taken account of and where should they be placed

**BSS:** The BSS would take account of the standard certification of the CO aspect of the alarm from the manufacturers (i.e. certified to EN 50291) and the fitting instructions.

The BSS will continue to promote the selection of CO alarms certified to EN 50291-2, which do not at this time include dual alarms. Relatively low numbers of these dual alarms are likely to be found on boats and the acceptability and placement will be covered in examiner training and we do not foresee any barriers for certified proprietary units.

**Installation:** The people who suggested amendments and some of those who disagreed with this question were again mainly concerned about the complexity of boat interiors as well as the ability of examiners to be consistent in the interpretation of this check.

**BSS:** The suitability of alarms is reasonably straightforward to determine, and to guide boat owner selection, we have published a list provided by the industry association CoGDDEM of alarms recommended by the manufacturers for use on boats. As with all claims of BSS compliance, an appeal process will quickly resolve whether previously purchased models with no obvious marking indicating accredited certification, meet the criteria.

These are two important aspects related to the consistent interpretation and application of the placement of CO alarms. The BSS knows it will require the combination of precise ECP text and effective examiner training, so we will be ensuring we properly address these points. We will be reviewing the text and already had plans to introduce effective examiner training.

**Hydrogen from boat batteries:** Several people had concerns about CO alarms activating when boats domestic or traction batteries gas off, especially if over-charging.

**BSS:** The chemical sensors at the heart of CO alarms meeting EN 50291 do react to hydrogen, typically around 5% of the Lower Explosive Limit (i.e. substantial). So, should battery charging produce enough hydrogen to activate an alarm, it is a call to action not to be ignored.

If any boater is confident that a CO alarm activation was not caused by the presence of CO, they should investigate the issue before a more serious situation occurs. Moving the CO alarm further away from the battery compartment is not dealing the possibly substantial issue that could be occurring.

If the CO alarm is known to be activated by hydrogen during battery charging, we suggest:

a) Immediately open ventilation to disperse the hydrogen – noting that it rises rapidly



- b) Do not activate or de-activate any electrical appliances in the cabin in case of sparks, until at least of few minutes of ventilation have occurred
- c) Stop the charging process
- d) Feel if any one battery is warmer than the others. If the fluid in the cells is visible, see if any cell or cells is/are bubbling more rapidly than the others.
- e) Have an expert check the batteries especially the electrolyte levels in the cells, the charging circuit and the ventilation of the battery compartment

This order is important, as ceasing the charging process could also generate a spark. We will promote this information so that people are aware of this possibility and course of action should it happen

### Q5 – Do you agree that the Check D is supportable?

**Overall results:** 216 agree (83.7%), 14 agree but suggest amendments (5.4%) 24 disagree (9.3%), 5 DNA (1.6%)

D	Are carbon monoxide alarms in good condition?	Requirement
Where one or more carbon monoxide alarms have been found to be necessary at Checks A and/or B, visually check the condition of each required carbon monoxide alarm.  Operate the test function button on each alarm.	Carbon monoxide alarms must be in good general condition, and must not show signs of any of the following indicators of poor condition: <ul style="list-style-type: none"> <li>• damage or deterioration to the body of the alarm or the fixing mechanism;</li> <li>• having passed any manufacturer’s express replacement date;</li> <li>• failing the test function test.</li> </ul>	
Applicability – examiners are not required to opening up alarms to check for internal damage or deterioration or for manufacturer’s express replacement dates.		

**Reliability of test button assessment:** The main concern for people suggesting amendments in Question 5 concerns the test process. They query the effectiveness of the simple push button test in proposed Check D. Some respondents suggest the use of CO aerosol sprays.

**BSS:** The sensors in suitable CO alarms are two-electrode electrochemical amperometric fuel-cells. They generate a small current flowing between the two electrodes when CO interacts with an acidic electrolyte which is in contact with the electrodes. Clause 4.5 of BS EN 50291-1 states:

**“The apparatus shall provide a fault signal in the event of loss of continuity or short circuit to the sensor. The fault signal shall be clearly identified and different from a gas alarm.”**

A compliant CO alarm will therefore have been tested by the UKAS-accredited Notified Body and test laboratory to ensure that these automatic tests will indeed identify a sensor failure.

CoGDEN member CO alarm manufacturers (as listed in check C which are Ei Electronics, Firehawk, Honeywell, Kidde, First Alert, FireAngel, BRK and Dicon) go much further than this, their products employ sophisticated self-test techniques to automatically and regularly pulse-test the alarm’s internal sensor to determine the state of the acidic electrolyte and the electrodes to compare the results with that actual sensor’s as-new characteristics. This enables the alarm’s intelligent control algorithms to determine the health and efficacy of the sensor, reporting a fault condition if one should occur or if the sensor reaches the end of its working life.

The manufacturers have each published documents about how their alarms test sensors, such tests occur regularly at intervals such as every 60 minutes in the case of one manufacturer, 16 minutes with another and 3 minutes with another. These tests occur irrespective of whether the test-button is pressed.

However, a press of the test-button will manually invoke the pulsed sensor test, so when the user or test-engineer receives a positive result after the test-button is pushed, this confirms the sensor is fully active, the analogue and digital circuitry and software are operational, the battery is healthy, and the alarm LEDs, display and audible sounder are functioning correctly.

Obviously, a mechanical blockage of the gas path to the sensor could stop a CO alarm from correctly responding to ambient CO, but manufacturers have never seen a completely blocked gas inlet hole or sensor membrane from a returned CO alarm and have never had a returned unit which passed the test-button test yet failed to respond to gas.

Testing by using aerosols or any other CO creating source is not appropriate. It would be impossible to replicate precisely the various relevant densities of CO over the related time periods. It could also be injurious to examiners to create and work in clouds of self-created carbon monoxide repeatedly through a day.

#### **Q6 – If you have amends to suggest or any comments on the proposed format of the checks please use this box to make your comments.**

7 responses use the phrase ‘nanny state’ when logging their opposition to the proposals.

2 responses considered the proposals to be outside of the scope of the BSS.

**BSS:** These comments were covered in question 1 above.

#### **Q7 – Do you support the future possibility of introducing similar checks concerning smoke alarms for private boats?**

**Overall results:** 197 ‘yes’ (76.1%), 55 ‘no’ disagree (21.2%), 7 DNA (2.7%)

This is summary of the comments made in response to this question:

- Smoke alarms are given away by some fire and rescue services
- Any fire risk is minimal, and sinking is more critical
- Smoke alarm installation on boats cannot be enforced
- No smoke alarms for boats without engines. No smoke alarms for small boats such as small cabin cruisers.
- Smoke alarms are not suitable for boat and there will be too many nuisance activations
- There have been numerous reports of false alarms as a result of cooking on our hire yachts with the current requirement for smoke alarms. [Hire boat operator]
- Test buttons on smoke alarms may not test the circuitry
- Two mentioned that householders are not required to have smoke alarms, why should boats
- Cannot follow manufacturers’ instructions in installing these on boats
- The specification of the correct international standard is important
- Ionisation smoke alarms are not suitable as they have a short lifespan on boats
- Heat detectors are better than smoke alarms
- There were 10 comments generally supportive of introducing smoke alarms on boats
- Two people mentioned that smoke alarms are different to CO alarms as early detection of fire could help control a fire and prevent it spreading to other craft
- One person thought alarms provision should be part of the Recreational Craft Directive of a British Marine led approach

**BSS:** This question was added to the CO alarm consultation as a useful gauge of attitudes to the concept. As there is no formal proposal to introduce smoke alarms currently, we will not provide formal responses to each point. However, all these comments should provide useful points in any discussions at the BSS committees should there in the future be any initial proposals to introduce smoke alarms as a requirement.

**Q8 – Do you have any comments to make about this consultation? Have we been clear? Have we given you the proper opportunity and adequate means to contribute your views?**

Many respondents used this text box to add specific and general comment about the proposals and were not specific about the quality of the consultation.

25 responses indicate either a good or better perception of the consultation, including a handful that thought it was exemplary.

5 responses indicate that the consultation is a ‘rubber-stamping’ exercise and the introduction of the proposed BSS requirements is a foregone conclusion.

1 comment Q9 was that there was not enough space. The comment box was open text field area and had no character limit set.

**BSS:** This has been one the largest responses the BSS has ever had to its consultations. There have been many very thoughtful comments, some long and some pithy, but nevertheless useful. The comments have been useful, especially in relation to the numbers, type and testing of CO alarms. They have prompted us to test our ideas and proposals and check for further information in some specific areas.

The overall attitudes are indicative a likely general support although all respondents are self-selecting.

The BSS has provided extensive evidence and supported the consultation with a full background to the approach. We hope we have demonstrated the care with which we consider introducing any new checks and especially new regulations.

**Q9 – Can you see any further unintended consequences concerning introducing the proposals beyond those already mentioned in this consultation?**

162 can't see any unintended consequences (62.6%), 54 believe there are some (20.8%), 43 did not answer (16.6%).

**Mission creep:** Seven people used this question to state or restate the point that the BSS intends extending its mission way beyond that originally envisaged i.e. to save us from our own stupidity and that it is being dictatorial.

**Examiner consistency:** Two mentioned consistency of examiner and over-application of BSS requirements.

**BSS:** Both points are covered by our responses at Q1

**Cost:** Cost of compliance. The proposals will inflate the cost of alarms and force people off boats.

**BSS:** We covered the cost of alarms in detail at Q4. We do not believe the cost will go up resulting from any new requirements for boats. And based on the relatively lost cost of CO alarms, we cannot see that this will be the trigger for people to stop boating.

**Nuisance alarms:** How will nuisance alarms be dealt with on unoccupied boats

**BSS:** We will be offering support for boater, navigation authorities and moorings operators on how to react to an alarm activation be it in a boat on use or a likely unoccupied craft. This will be published along with other advice in late January or February.

**Over reliance on CO alarms:**

- An alarm working during the BSS examination could fail after being checked and the occupants would not be aware
- Three respondents thought that some boaters will rely on the alarm and delay maintenance

- It will be difficult to enforce

**BSS:** the role of the BSS, the BSS Examination findings, and examination report, relate only to the facts observed at the time of the BSS Examination. It is not evidence of compliance with the navigation authorities' requirements at any other time.

It is crucial for an owner to maintain the vessel in good condition in accordance with the safety requirements; and, any other licensing, registration or mooring conditions of the relevant navigation or harbour authority.

An essential part of owning a boat is understanding and addressing the CO risks that could arise. An understanding of CO should prevent misuse of alarms. The BSS will continue to work with partner organisations to promote education and awareness about CO, its causes, how to avoid CO and recognising the symptoms of CO poisoning.

**Pollution:** It will be encouraging plastic pollution

**BSS:** Alarms have an extended lifespan of several years. They are covered by the Waste Electrical and Electronic Equipment Directive. The directive has the following aims:

- > Restrict the use of heavy metals
- > Reduce the use of hazardous substances
- > Introduce the marking of components to support recycling
- > Encourage design to facilitate ease of dismantling, reuse, recovery and recycling
- > Obligate distributors to allow consumer 'take-back'

**Unintended extension of the scope of the Scheme:** It will bring boats into scope of BSS examination that are currently outside (i.e. boats with fuel or electrical systems aboard)

**BSS:** Boats currently outside of the scope of the Scheme will not be brought into the Scheme.

**Unwarranted diversion:** The numbers of CO incidents and fatalities do not justify these proposals and diverts the focus from other more numerous matters

**BSS:** On average, three boaters die every two years from CO poisoning and many others require medical treatment. The recent research is indicating that the potential from harm has been under recognised i.e. occurs at lower than previously thought concentrations. And that the incidence of CO exposure is greater than previously understood. The navigation authorities cannot fail to act on one recognised risk, whether or not other important potential risks exist too.

**Salt attack:** Concerns about the effects of a salt-rich atmosphere on sea going boats that also visit inland

**BSS:** CO alarms are in use on coastal boats, including most charter yachts. There are no reported issues concerning CO alarms used on coastal boats. The CoGDEM view is that CO alarms located away from direct salt spray will be fully effective on coastal boats. The manufacturers of CO alarms compliant with EN 50291-2 are obliged to take salt spray into account.

**Q10 – Please tell us your name and indicate your sector of interest (for example boat owner, hire boat operator, navigation authority, marine trader, BSS examiner, if other please state). Please let us know if you are responding as an individual or on behalf of a company, representative group or trade organisation.**

Many provided multiple answers, however as a general guide 184 responses (71%) indicated boat owner within their selection. BSS Examiners 10 (3.9%), marine trade 6 (2.3%), navigation authorities 4, boat owner associations 4, yacht users/skippers 3, Government units 2, hirers 3

### **Q11 – Are you happy for your name and organisation to be made public?**

160 happy for name/organisation to be made public (61.8%), 86 not happy (33.2%), 13 DNA (5%)

### **Q12 – Are you happy for your responses to be made public?**

207 happy for responses to be made public (79.9%), 40 not happy (15.4%), 12 DNA (4.7%)

### **Q13 – In regard to your responses, do your responses/comments relate to any particular area of the inland waterways\*? It would be helpful if you would select one of the following:**

• All inland waters / general	150
• Avon Navigation Trust	1
• Basingstoke Canal Authority	1
• Bridgewater Canal Company Ltd	1
• Bristol Harbour	1
• Broads Authority	26
• Canal & River Trust	35
• Chelmer & Blackwater - Essex Waterways	1
• Conservators of the River Cam	0
• East Yorkshire Waterways & Humber	2
• Environment Agency	11
• Lake District National Parks	1
• Loch Lomond	0
• Middle Level Commissioners	0
• Port of London Authority (PLA)	0
• R. Wey - National Trust	0
• Scottish Canals	1
• Other	12
• DNA	11

Ends