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BLUNT WARNING ABOUT THE DANGERS OF USING PORTABLE GENERATORS ONBOARD FROM LEADING INLAND BOAT SAFETY BODY

Televisions, laptops, mobile phones, power tools, heaters or simply charging the boat's batteries, whatever the electrical need, the stark warning from a leading boat safety body is that petrol generators will continue to cost lives and cause misery unless boaters use them correctly.

Boat Safety Scheme (BSS), made this blunt statement in light of the fatalities and injuries that have taken place on boats across the UK in recent years; devastating events that could have been avoided if the correct safety measures were taken.

Petrol generators can be seen as critical to some boaters wanting off-grid electrical power. Yet the fact that generators emit deadly carbon monoxide and need refuelling with highly flammable petrol means they must be never be installed in an enclosed cockpit area or engine space of a boat and must never be used on or close to the boat where exhaust fumes could enter the boat and where they can cause injuries or fatalities.

Graham Watts, BSS manager, Boat Safety Scheme says,
"On too many occasions we hear of fatalities or near fatalities on boats caused by the incorrect use of portable generators. The heart-breaking thing is that on most occasions the accident could have been avoided, and lives saved, if generators are used according to manufacturer's instructions – in the open and away from the boat."
The BSS says that if boaters want to use generators, these three basic bullet points should be followed: -

- Never install a portable generator permanently or make unauthorised modifications that are not supported by the manufacturer, or proprietary component supplier.
- Never run generators on the boat, or on the bank near to the boat's doors, vents, windows and hatches. If you can smell exhaust fumes in the boat, it could mean the cabin is also filling with deadly carbon monoxide.
- Never refuel any generator anywhere aboard the boat; take it to the bank and ensure you are a safe distance from other boats and potential sources of ignition.

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Continued from Page 1

However, make sure you are keeping to any marina or mooring-owner guidance and rules on the use of generators, refuelling and the handling of petrol on their sites.

Further advice for boaters on staying safe using generators is available on www.boatsafetyscheme.org/generators .

- ENDS –

NOTES FOR EDITORS

CO is a highly poisonous gas that weighs about the same as air. At high concentrations, CO can kill without warning, sometimes in only minutes.

It cannot be seen, smelt, tasted, or felt, that's why it's known as the silent killer! When you breathe in CO, it replaces the oxygen in your bloodstream, preventing essential supplies to your body tissues, heart, brain and other vital organs.

The Health & Safety Executive describes petrol as a dangerous substance; it is a highly flammable liquid and can give off vapour which can easily be set on fire and when not handled safely has the potential to cause a serious fire and/or explosion.

The fundamentals are that petrol, when spilt or exposed to open air, can vaporise quickly and the vapour can be ignited easily by any spark, flame, cigarette, etc. Even a small spill of petrol will create a large amount of vapour.

Escaping vapour will sink to the lowest level of its surroundings, accumulating at low level in places such as cabin floors, lockers, bilges and other 'still-air' spaces.

Even if the concentration of vapour is too rich to ignite immediately, it will dilute creating the potential for a serious fire and/or an explosion, even though, given enough ventilation, it may dissipate to a safe level eventually.

Further electrical and fire safety issues linked to the use of generators are covered on the BSS Stay Safe pages.

Records of incidents related to the use of generators over the past 25 years collated by the BSS show that 10 people have been killed and another 10 have been taken for emergency hospital treatment in 24 incidents.

A table of those incidents with brief details follows:

Date	Location	Incident Type	Brief Details
1992	Southern English river	fire	A fire linked to the use of a petrol generator
1996	Canal	fire	Fire believed to have been caused during the refilling of the generator with petrol.
1998	East Midlands river	CO	The narrowboat owner and his pet dog died of carbon monoxide poisoning. A portable generator and poor ventilation are believed to have been the cause.

1999	North of England canal	CO	Two boaters went to sleep. The lady woke up suffering from the effects of gas inhalation. Her husband was discovered dead by the emergency services. The inquest found the cause of the carbon monoxide poisoning was a portable generator found in the engine compartment.
2000	Southern English canal	-	The body of this boater was found at the bottom of the bed under which was a locker for his petrol generator. There was an open plastic petrol refuelling can at his feet. There was also a petrol driven chain saw and a cigarette lighter there as well. The generator petrol tank was full so it is likely he had filled it up. The coroner reported death as an accident and the probable cause was careless handling of petrol.
2003	West Midlands canal	CO	This boater purchased the craft and lived permanently aboard for three months before his death. The boat was very sparsely fitted having only a gas cooker and a fairly new generator on board. The generator was found in the cabin with a mobile phone charger and phone connected. The generator fuel tank was empty. The cause of death has been established as CO poisoning from the generator and very high levels of the toxin was found in his blood.
2004	Scottish coast	Fire	An owner of a yacht sailing was filling petrol generator aboard vapours are thought to have entered cabin and were ignited by cooker that was alight at the time. The boat sank and was a total loss. The man escaped in an inflatable tender.
2005	Southern English river	CO	A motor cruiser owner was taken to hospital with the effects of carbon monoxide poisoning and kept in overnight. A generator running inside vessel was believed to be the source of the toxic fumes
2005	Anglian canal	Fire	The owner of a narrowboat went ashore and left a generator running that became the cause of a fire
2006	N East coast	CO	A new crew member on a small fishing boat stayed aboard the vessel in port. He brought electrical consumer goods aboard and powered them from a generator running in a non-gas tight hold. The fumes from the exhaust found their way back into the accommodation space and caused his death.
2006	E Midlands river	CO	A boater was taken to hospital with CO poisoning after running a generator in his craft's engine compartment
2006	Anglian Canal	CO	The liveaboard boater was found towards the aft of his narrowboat. In the winter he ran the generator on the back deck of the boat which was covered by a tarpaulin. In the summer the boater usually ran the generator on the bank.

2008	N West lake	Fire	A newly acquired 11m wooden boat, bought for living aboard a remote location on a lake was in the process of having remedial works carried out. The friend of the owner who was working on the boat, refuelled a generator in the cockpit area and during this process petrol vapours ignited, possibly by the lowly situated pilot light of the gas-powered fridge in the cabin. The fire service had to take a ferry to attend the fire as this was quicker than taking the road. However, despite that, by the time the fire crews arrived, the boat was already fully alight throughout and could not be saved. The owner told the local newspaper that it was an uninsured £13,000 total loss and also had to pay £2000 to have the wreck removed. A navigation authority employee who attended the scene said to the reporter that they had to prevent the blazing craft drifting into other boats moored nearby.
2008	N West canal	Exp	Firefighters were forced to flag down a passing narrowboat to reach the scene of an explosion which injured a man on a midlands Canal. The man suffered serious burns when a fireball shot through a boat. Firefighters and a community first responder flagged down passing narrowboats to get to the incident and carry one of the injured to a waiting ambulance. A volunteer first responder with the ambulance service, said: “The windows had all been blown out but thankfully the boat itself hadn’t caught fire. “[The boater] suffered potentially serious burns to his face, arms and feet and I started treating him. “There had been an explosion in a generator at the front of the boat and a fireball had gone through the cabin, blowing the windows out.” The cause according to insurance investigators was a petrol leak from the generator. Another boater aboard was unharmed.
2008	E Midlands canal	CO	A MAN was found unconscious by emergency services after collapsing near a generator at the front of his boat. He suffered from carbon monoxide poisoning. Paramedics gave him oxygen and then took him to a local A&E hospital, but he was transferred to another hospital 90 miles away, for specialist treatment. A police spokesman said the man had very high levels of carbon monoxide in his blood. It is believed that he inhaled the fumes after collapsing near a generator on the boat.
2010	Southern canal	CO	A man was carrying out remedial works on a converted commercial boat and had brought aboard a generator for heating and lighting. Having carried out some painting works, the generator was left running aboard to power a heater to help dry the paint. Later that evening the victim returned to the vessel to refuel the generator. His body was found aboard the boat the following morning.

2010	Anglian river	Fire/Exp	The owner of a cabin cruiser was refuelling generator on stern of his vessel when the metal fuel can touched an uninsulated battery connection. This caused a spark that ignited the fuel vapour. That set his clothes alight and he ended up in the river. A local newspaper report gave this account: A man was with his family and a friend in a riverside pub's beer garden when he smelled smoke. "It was about 8.30pm. ..." "I looked towards the river and saw flames and then I heard a scream quickly followed by a splash. "I jumped a fence and saw a man struggling in the water, so I got hold of him and tried to pull him out of the river, but he slipped back. "At the time I thought I couldn't get a grip on him, I thought because of the water, but I later realised it must have been the skin on his arms. It was literally peeling off because he'd been so badly burned." The rescuer eventually managed to drag the boater from the river but the drama was not over as the boater warned his rescuer there were gas canisters still on board the burning boat. At this point the boat was completely engulfed by flames and the rescuer's friend took the boater aside to try and calm him down while the emergency services were called. The rescuers said "There were about 50 people in the pub who'd come out to see what was going on so, with the help of staff, we tried to get everyone back inside. We were worried there could be a serious explosion." The rescuers friend said "The boater's arms and body were completely covered in burns and his skin was hot to the touch and just falling off. I got him inside the pub where staff took him to the kitchen to pour cold water over him." Police and fire crews quickly arrived on the scene and the blaze was eventually extinguished shortly after 10pm. The victim had suffered 50 per cent burns to his body and was taken by ambulance to a local A&E hospital. He was later transferred to a specialist burns unit 25 miles away.
2010	Northern canal	Fire/Exp	A narrowboat's owner had put the portable generator in the engine space with all the hatches and doors closed to charge batteries and run a fridge. The skipper noticed a change in generator noise and went to investigate. He switched off the generator and an explosion occurred. There was extensive damage to the structure of the steel boat as well as damage to the furniture and fitments. The owner suffered burns. He thought the generator would be unsafe on the towpath.

2011	Anglian coast	CO	A COUPLE almost died from carbon monoxide poisoning after a generator leaked on their yacht. Their craft was at anchor in a coastal inlet, when they started to feel the effects. The lady fell unconscious, leaving her husband battling to get them to safety. A leak in an improvised exhaust connected to the generator allowed exhaust fumes to flood deadly carbon monoxide into the boat. The skipper was quoted in the local newspaper: "The first point I was aware something was going on was when I got weird muscle spasms. "Then my wife passed out and I knew that something was very wrong. I became very weak myself, and I couldn't have been far off passing out.
2012	N West coast	Fire	An 18m former fishing vessel was completely destroyed by fire. The fire broke out just after midnight and the fire spread to a nearby jetty building at the site. The fire service found access was difficult as the boat was lying on mud banks, particularly in the dark. Sourcing water to use was also a problem for the fire-fighters and six engines had to form a relay. The owners were not aboard, but the fire service understands that the owners spent some time living on it. The probable cause was thought to be a fault with a generator.
2012	S East river	Fire	An 18m narrowboat caught fire on moorings. The navigation authority reporting the incident advised that the cause was probably linked to the use of a generator may be linked.
2013	N West lake	CO	A "suitcase" type portable petrol-driven generator had an improvised installation in the motor cruiser's engine bay. The generator had been fitted with a non-standard exhaust system that when run under load, detached from both the generator and the outlet on the vessel's side. As a result, the generator's exhaust fumes filled the engine bay and filtered through gaps in an internal bulkhead into the aft cabin where a mother and daughter were asleep. The boat owner awoke from his bunk in the boat's forward cabin, to find he was suffering from carbon monoxide poisoning but he was eventually able to raise the alarm. Emergency services could not revive mother and daughter. The nature of the generators installation also introduced additional potential fire and explosion hazards to the boat.
2014	Southern canal	CO	Neighbouring boaters alert the emergency services when they saw the boat owner slumped in chair with the body of his dog alongside. Inquest found that the boater had been using a portable generator while watching a film on his laptop when he died. He had his generator running on his back deck with a canopy over it.

2015	Midlands canal	Fire	A liveaboard owner of a small cabin cruiser was forced to leap overboard and his guest had a narrow escape when the small cabin cruiser they were on went up in flames. The breakfast time incident resulted in the death of the man's pet dog and the total loss of his home. The boat was already well alight when the two fire crews reached the site. A local newspaper quoted the fire officer in charge: "It appears the fire was caused when the owner had been refilling an onboard generator. The fumes and petrol had created a fireball." The owner was forced to jump into the water while the other occupant was able to get off onto the footpath." Sadly the dog that was inside died."

About the **Boat Safety Scheme (BSS)** - The BSS is a public safety project owned jointly by the Canal & River Trust, registered as a charity with the charity number 1146792, and the Environment Agency. At least 14 other navigation and harbour authorities have also adopted it.

The navigation authorities' purposes for the Scheme are to help reduce the risks of fire, explosion and pollution on small craft.

The BSS' purpose is to help minimise the risk of harm to visitors to the inland waterways, the waterways' workforce and adjacent properties, as it is to these parties that the Navigation Authorities may have duties in law. Equally it contributes to the common goal to make the waterways a safe, attractive and pleasant environment for all.

The BSS helps control the hazards which are introduced by boats which have been inadequately constructed or maintained or hazards introduced by boat owners. The Navigation Authorities using the BSS, have two broad approaches in respect of privately owned and privately managed boats.

1. The BSS Examination - Firstly, the BSS supports the Navigation Authorities by helping monitor and develop their minimum safety (legal) requirements necessary for boat owners to obtain permission to use Authorities' waterways.

   Independent and authorised BSS Examiners are in place carry out BSS Examinations and verify whether any given boat meets those minimum safety standards. A boat must be examined every four years.

2. Awareness raising - Secondly, the BSS employs education, persuasion and promotion of safety to address accepted risks linked to the use of appliances, engines and associated boat systems and fuels. BSS safety information assists owners identify and control the risks for which they have a responsibility - this means risks associated with carbon monoxide poisoning and electrocution. Some of these risks are identified by the 'Advice Checks' within the BSS Examination for boats in private use and management. Similar checks on non-private vessels, including those such as hire craft and small passenger boats, are required passes.

Since 2005 the BSS has been closely monitoring incident data and it is clear from the known causes of incidents that owner behaviour, maybe due to a lack of awareness, is the main contributory cause of incidents.

It follows that promoting safety awareness is the measure is a key ingredient to achieving safer waterways.

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