

# Greener fuels may not make shipping safer – here's why

May 18 2018, by Paul A. Davies

---



The shipping industry has been slow to use greener fuels. Credit: Louisevest/flickr, CC BY-SA

Global shipping emits [2% of the world's](#) carbon dioxide emissions and this is projected to increase. No wonder there have been widespread

calls for the shipping industry to reduce its hazardous emissions by replacing traditional fuels with "greener" alternatives.

These greener fuels, such as liquefied natural gas, hydrogen and methanol, help reduce [greenhouse gas](#) (GHG) emissions and limit the exhaust of nitrogen oxides, sulphur oxides and particulate matter that are polluting the environment and affecting our health. But alongside these benefits, they pose new safety concerns – and ones that we need to take seriously.

Most governments agree that the [shipping industry](#) must move to greener fuels. Within this context, the UN's International Maritime Organisation (IMO) has adopted measures to limit harmful pollutants and, most recently, has agreed targets to [reduce greenhouse gas emissions](#).

But so far the shipping [industry](#) has been relatively slow at embracing greener alternatives. This is due to a variety of reasons. For a start, greener fuels are more difficult to acquire than traditional ones, and ships need to be redesigned in order to use them. With slow development of regulations and an unfavourable economic climate, the shipping industry has until recently been hesitant in embracing these alternatives. Only now in 2018, led by [new regulation](#), government coaxing and monetary incentives are [alternative fuels](#) at the tipping point for widespread adoption in shipping.



The Deepwater Horizon oil spill had a terrible impact on the environment.  
Credit: US Coast Guard

## **Green but not harmless**

Unfortunately, compared to traditional fuels, greener alternatives have a greater potential to cause major accidents. This is partly because they are less efficient fuels, requiring ships using them to hold greater quantities onboard. But it's also due to the dangerous properties of these fuels.

Both natural gas and hydrogen need to be stored as liquid at sub-zero temperatures. If these cryogenic liquids are accidentally released they could crack unprotected steel, expand to hundreds of times their original

volume and become flammable as they turn back to gas. Of course, this would be a serious problem if it occurred below deck, where ships generally store their [fuel](#). Hydrogen is also far easier to ignite than traditional fuels, while if methanol ignites its flames are almost impossible to detect without specialist equipment.

The intrinsically dangerous properties of greener fuels and the need for larger quantities means that the safety risk presented to crew, passengers and others can be very different to that from traditional fuels. To ensure safety, different and more sophisticated equipment and safeguards are needed. And these require greater knowledge and skill to design, manufacture, inspect, install, commission, survey, operate and maintain. Add in the fact that the chance for human error increases when things are complicated, new and unfamiliar, then it is clear we must engineer and use these fuels with caution.

One solution is to adopt [inherently safer designs](#) and [risk assessments](#) to ensure that equipment works efficiently and that appropriate safeguards are in place. This would mean that no matter how strained the fuel system is, the chance of an accident is minimised and the consequences limited.

Some will argue that such caution is unnecessary since no serious accidents have occurred with such fuels. It is true that huge quantities of liquefied [natural gas](#) (LNG) have been transported since the 1960s without serious incident. But shipping large amounts of LNG in bulk using dedicated cargo ships with a small number of specially trained crew does not compare with using LNG as fuel on a ship holding thousands of passengers. The societal risks are entirely different and require us to apply different levels of caution. And we know that a reliance on regulation has not prevented major accidents in the offshore oil and gas industry, whose regulation and enforcement is generally more stringent and mature than shipping.

There is no doubt that the shipping industry needs greener fuels to help combat global warming and pollution, but we should not underestimate the hazards and risks that they present. So we need to be cautious and ensure that the safety of greener fuels is prioritised. While we must combat shipping's contribution to global warming, we have to do so in a way that minimises the potential for major accidents.

This article was originally published on [The Conversation](#). Read the [original article](#).

Provided by The Conversation

Citation: Greener fuels may not make shipping safer – here's why (2018, May 18) retrieved 19 April 2024 from <https://phys.org/news/2018-05-greener-fuels-shipping-safer.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--