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Blast puts safety of ammonium nitrate under scrutiny

Shipped under the proper guidelines, ammonium nitrate is safe. But there are concerns about national regulations not being applied that could potentially lead to another explosion

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Following the destruction caused by ammonium nitrate exploding at Beirut's port, there are concerns globally about its storage — but there are strict regulations about where it can be kept and for how long



MISHANDLED AMMONIUM NITRATE CAN HAVE DEVASTATING EFFECTS.

Source: Haytham El Achkar/Getty Images

THE risk of another major port explosion similar to that in Beirut cannot be ruled out, but is unlikely to occur if safety guidelines are adhered to.

The vast majority of ammonium nitrate, which is widely used around the world as a fertiliser or for explosives in mining, is “relatively harmless” and its storage and transport is already well regulated through the International Maritime Organization.

“Ammonium nitrate has various degrees of composition, which determines whether it is considered dangerous goods or not,” said Richard Brough, technical adviser at the International Cargo Handling Coordination Association.

“Most of what we handle is regulated by the IMO through the International Maritime Dangerous Goods Code if it is packaged or through the International Maritime Solid Bulk Cargoes Code.”

But if stored in the wrong conditions or is contaminated, ammonium nitrate can become volatile, he said.

Contamination through oil, grease or even wood products could change the product's thermal properties.

"Of itself, ammonium nitrate will not normally self-combust," Capt Brough said. "It usually needs another source to set it off and it looks like in the case of Beirut there was welding going on nearby that could have ignited a fire that then set off the ammonium nitrate."

The problems could be accentuated, however, if the bags it was stored in had degraded.

"All warehouses have drains, and if it leaks into a drain it is in an enclosed space, which effectively turns it into a bomb," Capt Brough said.

The size of the explosion in Beirut "begs the question why that amount of ammonium nitrate was allowed to sit in a warehouse in close proximity to the city".

"We can only speculate, but it clearly looks like procedures were not followed," Capt Brough said. "We know it was seized to pay port fees, but it should then have been moved on."

Ports in the UK need a licence to handle ammonium nitrate, and it is heavily regulated in Europe under the Seveso directive.

"The Control of Major Accident Hazards Regulations in the UK means anyone applying for a licence to handle ammonia nitrate has to take into consideration how it will be shipped, transported from the port and how it will be stored.

"This includes where it will be stored. Are you in the middle of an industrial port with nothing around you or are there other major industrial installations, such as a refinery, next door?"

The British Ports Association said in a statement: "Following the tragic explosion at the port of Beirut this week there has understandably been some local interest in the storage of products containing the chemical at UK warehouses, storage facilities and ports.

"The UK has a comprehensive legislative regime for the storage of ammonium nitrate and there is a robust licensing process for those wishing to store the chemical and other potentially explosive products in the UK."

It said licences are granted by either local authorities, the police, the Health and Safety Executive or the Office for Nuclear Regulation.

Capt Brough said international controls for shipping were "quite stringent", but issues arose once a cargo had been offloaded.

"There are recommendations for transport and storage but these are aimed at national authorities to set up their own legislation. Some ports are less sophisticated than others and the degree to which that is actioned varies."

Casualties like the one in Beirut occurred when people took their eye off the ball and failed to follow regulations, Capt Brough said. "Sometimes commercial pressure prevails, or there is just ignorance of the law. You can see the price they're paying for that in Lebanon."