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Managing scheduled extinguishing agents in the marine industry: safety, best practice and environmental responsibility

FIRE safety is paramount in the Australian maritime sector. From leisure craft and fishing vessels through to ferries, offshore supply vessels, tankers and container ships, all vessels face inherent fire risks, particularly in engine rooms, galleys and other confined spaces.

For many operators, gaseous fire-suppression systems rely on scheduled extinguishing agents, which are fire-suppression gases regulated under Australian law because they have the potential to damage the ozone layer or contribute to global warming if released. While these systems play a critical role in protecting lives and vessels, best practice in their use is essential to ensure fire safety outcomes are achieved without causing avoidable environmental harm.

The Fire Protection Industry (ODS & SGG) Board (FPIB) is the Australian Government appointed body responsible for overseeing the safe and lawful use of ozone depleting substances (ODS) and synthetic greenhouse gases (SGGs) used in fire protection. Acting on behalf of the Department of Climate Change, Energy, the Environment & Water (DDCEW), the Board administers the fire protection division of the *Ozone Protection and Synthetic Greenhouse Gas Regulations 1995*.

This includes managing the national licensing and permit schemes that apply to individuals and businesses who acquire, handle, install, service, maintain or dispose of scheduled extinguishing agents. Through this role, the Board promotes compliance, supports industry best practice and works to prevent unnecessary emissions that

undermine Australia's domestic and international environmental commitments.

Within the maritime sector, commonly used scheduled extinguishing agents include FM-200® and NAF-S-III, which are widely installed in fixed gaseous fire suppression systems protecting engine rooms and other high-risk enclosed spaces.

These agents are valued for their ability to rapidly suppress fire where water is unsuitable. However, they require a licence to use because of their environmental impacts if released unintentionally. Some scheduled agents can contribute to Ozone Depleting Potential (ODP), while others are potent SGGs, with a Global Warming Potential (GWP) many thousands of times greater than carbon dioxide. From a best practice perspective, preventing avoidable discharge is therefore just as important as ensuring a system will operate effectively during a fire.

Best practice begins with ensuring systems are properly designed, installed and commissioned for the space they are intended to protect. Changes to a vessel over time, such as engine upgrades, structural modifications or ventilation alterations, can affect whether a system will perform as designed. Ongoing maintenance and inspection by licensed technicians is critical to confirm that systems remain within their design parameters and that components such as cylinders, actuators, pipework, nozzles and fire flaps are functioning correctly.

Regular testing and servicing also play a key role in preventing unintended releases of scheduled

extinguishing agents. Some vessel owners may view maintenance as an avoidable cost, particularly if a fire incident seems unlikely. In practice, the longer a system remains untested, the greater the risk of accidental discharge or complete failure. For an average-sized vessel, a single gas cylinder can contain around 13 kilograms of scheduled extinguishing agent, with replacement and installation costs often exceeding \$2,500.

An avoidable discharge not only carries a high financial cost but also results in the release of environmentally harmful gases into the atmosphere.

To better understand how these risks arise in practice, the FPIB consulted John Nightingale, Special Hazards Fire Technician at Wormald Australia, who regularly installs, tests and services gaseous fire suppression systems on marine vessels. John notes that maintenance is often overlooked, particularly in parts of the private sector where servicing requirements may not be well understood.

“We often find that private vessel owners wait until something goes wrong. It's akin to driving on bald tires and only seeking repairs after an incident,” he says.

Australian Standard AS 1851 recommends annual servicing of fixed fire suppression systems and six-monthly servicing of portable extinguishers, along with pressure testing of gas cylinders at prescribed intervals. From an environmental perspective, these measures are critical. Low-pressure gas cylinders, in particular, present a higher risk of leakage over time, which can result in slow

and unnoticed emissions of scheduled extinguishing agents into the atmosphere.

“Many owners don’t realise their system contains environmentally harmful chemicals,” John explains. “When we install a system, we explain how it works and the potential atmospheric impacts if gas is unintentionally released. The actions taken today affect future generations.”

Best practice also involves actively managing the risk of accidental discharge during vessel maintenance. Many marine fire suppression systems are located in engine rooms and operate via mechanical or cable activation. If cylinders or activation cables are not adequately protected, unintentional discharge can occur while other work is being carried out.

“The risk is often highest during engine servicing,” John says. “Sometimes owners don’t realise they can secure the cylinder or temporarily disconnect the system. A licensed fire protection company can do this safely and prevent a very costly and environmentally damaging mistake.”

Ensuring only appropriately-licensed technicians handle scheduled extinguishing agents is another cornerstone of best practice. Under Australian law, any person handling extinguishing agents listed in Schedule 1 of the *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989* must hold a valid Extinguishing Agent Handling Licence (EAHL) issued by the FPIB. Licensed technicians are trained not only in fire safety, but also in environmental protection and regulatory compliance. Engaging unlicensed operators increases the risk of incorrect installation, system failure and uncontrolled emissions.

“If fire flaps don’t close properly, the gas escapes and the engine



room is left unprotected,” John notes. “These are issues that only come to light when systems are properly inspected by someone who understands them.”

Beyond safety and compliance, best practice has broader implications for insurance, liability and environmental responsibility. Insurers may deny claims where fire suppression systems have not been serviced in accordance with standards, and avoidable emissions of scheduled extinguishing agents undermine Australia’s efforts to reduce ozone depletion and limit SGGs under the Montreal Protocol and Kigali Agreement.

In support of improved outcomes across the sector, the FPIB is expanding its field engagement activities through increased site visits to marinas and marine facilities across the country.

These visits provide an opportunity to engage directly with vessel owners, operators and marina managers, to offer practical guidance on compliance and best practice, and raise

awareness of licensing and permit requirements. Strengthening the ground engagement helps address knowledge gaps and reinforces the importance of safe, compliant and environmentally responsible fire protection practices.

Ultimately, best practice in the use of scheduled extinguishing agents in the maritime industry means achieving fire safety without unnecessary environmental cost. This includes proper system design, routine servicing, use of licensed technicians, prevention of avoidable discharges and consideration of environmentally preferable alternatives where feasible.

By integrating safety, compliance and environmental stewardship, the maritime sector can protect lives and assets while also playing its part in safeguarding the ozone layer and limiting the impacts of global warming.

**Fire Protection Industry
(ODS & SGG) Board**