

# NAVAL NUCLEAR POWER

## KEY HEALTH ISSUES

MARCH 2024

**Naval nuclear reactors - like all nuclear reactors - pose potentially serious risks for people and the environment.**

Unlike other reactors however, most information about naval reactors is kept classified, and it can be difficult to say how safe they are. For communities in current and potential port sites, there are key questions to be answered; naval reactors should not be imposed on communities without informed consent.

There are also broader health risks to all Australians from the planned acquisition of nuclear-powered submarines and a significantly increased presence of foreign nuclear-powered vessels in our ports.

### RADIATION

Wherever there is a nuclear reactor, there is a potential for harm to people and the environment through the release of radioactive contamination. While this risk with naval nuclear reactors is very low, communities must be prepared for such disasters.

A naval reactor accident, or an attack on a nuclear-powered vessel while it is in port, could cause harm to people and the environment in various ways.

External gamma irradiation can emanate from the vessel, from drifting radioactivity and from material deposited on the ground.

The surrounding area can be contaminated with radioactive iodine (I-131) and radioactive cesium (Cs-137). Both of these move easily into the environment – land, air or sea - and can be inhaled or ingested and enter the food chain. Radioactive iodine will decay completely within a matter of months (its half-life being 8 days), but it can reach milk from cows grazing in contaminated pastures. In the case of radioactive cesium, the contamination will last for many decades (its half-life being 30 years).

**Key questions:** Will communities be educated to respond to accidents promptly? How would stable iodine (to prevent the body's uptake of radioactive iodine) be distributed to the community so that it can be taken immediately an accident occurs?

### MEDICAL CAPABILITY

Health and emergency services in port sites must have the training and capability to respond to a worst-case accident scenario involving a nuclear reactor.

However, medical interventions are very limited in the extent of harm mitigation they can provide.

**Key questions:** What is the existing radiation emergency capability in current and proposed nuclear sub port sites? How will any gaps in training and capability be addressed, and funded? Will local health and medical services be consulted?

## SECRECY

Because most of the detailed information about how nuclear subs and naval reactors are designed is kept classified, risk assessments are 'best guesses' based on what can be known about existing ships and systems, and by making comparisons with safety systems in commercial reactors.

For example, an ARPANSA (the civil nuclear safety authority) report notes that there is uncertainty around what kind of emergency core cooling system naval nuclear reactors have.

The way an emergency cooling system works is important to understanding the risks of naval nuclear reactors to people and the environment - but this information is classified.

There is also precedent for withholding information about nuclear ship safety from the public. The UK Defence Nuclear Safety Regulator (DNSR) stopped allowing the public to access reports about nuclear sub safety issues in 2017.

Prior to 2017, the public was able to learn that there were numerous regulatory and nuclear safety breaches, and that the Regulator itself was understaffed and unable to properly function.

Legal appeals to gain access to safety reports issued after 2017 have been rejected on national security grounds.

## ACCIDENTS

*The International Atomic Energy Agency (IAEA) provides some data on nuclear submarine accidents. The data may be incomplete due to military secrecy.*

*Since 1963, six nuclear powered subs have been sunk entirely, including two from the US Navy. Nuclear weapons have also been lost at sea as a result of accidents. A 1989 Greenpeace study estimated 48 nuclear warheads and seven nuclear-power reactors on the ocean floor as a result of accidents.*

*Other confirmed accidents involved non-nuclear explosions, and incidents like fires, collisions, flooding, and running aground.*

*No recent accident data is publicly available.*

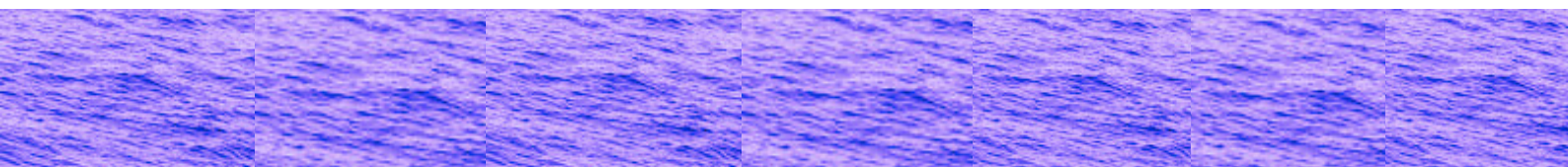
The AUKUS agreement itself was negotiated in secret, without any scrutiny from the public or the parliament, and the site selection process for a proposed new east coast port has also been kept secret.

**Key questions:** How will communities be properly informed about the risks of naval nuclear reactors? How will safety issues be monitored and communicated? How will the public interest in safety issues be protected?

## PLANNING + MODELLING

In Australian ports currently approved to accept visits from nuclear powered ships, responsibility for safety and emergency management is spread across a number of military and civil authorities at national, state and local levels.

When MAPW analysed Australian port safety plans in 2021, we found wide variation in the quality and



availability of emergency management plans. We found that some plans were inaccessible, outdated, or based on superseded medical information.

This suggests poor coordination and oversight, which may increase safety risks to the public.

The 2020 Nuclear Powered Warship Reference Accident Review report for ARPANSA models accident scenarios based on visits of nuclear subs to Australian ports.

The review notes that *visiting* ships pose less risk than a commercial reactor, but does not model the comparative risks of ships or reactors undergoing maintenance and sustainment at an Australian base.

**Key questions:** When will accident scenarios for nuclear subs at base be modelled and made public?

## REGULATION

Proposed regulatory arrangements may generate risks to public health and safety.

The proposed Australian Naval Nuclear Power Safety Regulator will report to the Defence Minister, not the Health Minister as is the case for existing nuclear safety regulation. This means the Minister responsible for operating naval nuclear reactors is also responsible for their regulation.

Insufficient independence of a regulator is known to be a factor in nuclear and radiation incidents, and does not comply with International Atomic Energy Agency (IAEA) governance standards.

In the UK, where a similar regulatory arrangement exists, internal and secret reports have documented “a failure of safety culture”.

**Key questions:** How can the proposed regulator meet the requirement for independent governance? Without independent oversight, how can the public be confident in the proposed regulator?

## CIVIL NUCLEAR POWER

Military nuclear power will facilitate the push for civil nuclear power in Australia.

In the UK, the expense of maintaining military nuclear capabilities, and developing a skilled nuclear workforce, is effectively underwritten by an otherwise untenable and uneconomic civil nuclear power industry. In Australia, the current push for civil nuclear power is likely in part an effort to distribute the nuclear costs and skills burdens - and relieve Defence of a politically unsustainable budget.

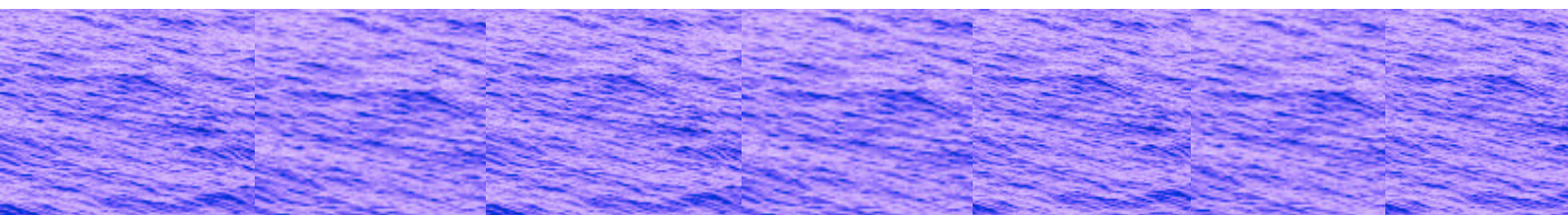
The health risks associated with civil nuclear power are well established.

## POPULATION HEALTH

The proposed nuclear submarines pose broader population health risks.

The estimated \$368 billion - which will almost certainly increase by a large margin - will reduce funds available for critically needed health, environmental, climate and other programs.

The naval reactors will produce High Level Waste (HLW) which Australia must manage and dispose of.



Australia does not have a site for long term management of any nuclear waste. HLW is highly toxic long-term and must be contained for over 10 000 years to minimise any risk to health and the environment.

Despite operating naval nuclear reactors for decades, neither the US nor the UK have developed long-term solutions for managing HLW.

Nuclear waste management and disposal proposals have historically negatively impacted Indigenous people and have threatened to violate Australia's obligations under the UN Declaration on the Rights of Indigenous Peoples.

The submarines are provocative in our region, risk sparking a regional arms race, and will increase the chances of Australia following the US into a catastrophic, and potentially nuclear, war against China.

The immediate and long-term health impacts of any war between the US and China would be incalculable.

In addition, global concerns have been raised by the fact that Australia's nuclear submarines will be fuelled by nuclear weapons grade highly-enriched uranium. This creates a risk of other nations also seeking access to weapons grade uranium, leading to an increased risk of nuclear weapons proliferation.

Any use of nuclear weapons would cause catastrophic harm to people and the environment.



Briefing prepared by the Medical Association for the Prevention of War. MAPW is a national organisation of health professionals working to promote peace and prevent war.  
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