



**Opening statement:
Middle Arm Inquiry
Doctors for the Environment Australia
June 18th 2024**

Doctors for the Environment Australia (DEA) is Australia's leading medical voice on health and climate. We recognise that human health and wellbeing require a healthy environment and that we have breached the safe operating zone for six out of nine planetary health boundaries, including climate change, biogeochemical flows, freshwater change and biosphere integrity.¹

We oppose the Middle Arm Industrial Precinct (MAIP) due to the unacceptable health impacts it holds for the Darwin region, the Northern Territory and the wider community. We refer the inquiry to our MAIP Submission 2023.²

According to information provided on the Middle Arm Development website, industries planned for inclusion include Liquefied Natural Gas (LNG) and its petrochemical by-products (methanol, ethylene, urea and ammonia).³ Processing of LNG produces toxic substances such as volatile organic compounds (VOCs), which include the carcinogen benzene^{4,5} and the neurotoxin toluene⁶. It also releases dangerous air pollutants like nitrogen oxides, sulphur dioxide and particulate matter (PM) 2.5 and 10.

We direct the Committee to the following medical research, which underscores our grave concerns about the potential health harms associated with the proposed development.

Local effects for Darwin and Palmerston:

Malignancy:

A 2020 systematic review and meta-analysis investigating the association between haematological malignancies and living near petrochemical facilities, found a 30% increased risk of leukaemia in fence-line communities, presumed due to exposure to air pollutants, notably VOCs like benzene.⁷ The study defined 'fence-line' as living up to 5km from a facility, which is comparable to the distance from the MAIP and the residential areas of Palmerston and Darwin.

Notably, the National Environment Protection Council's "Benzene Health Review" states: "the critical human health effects from long-term exposure to benzene are bone marrow depression and leukaemia, specifically acute non-lymphocytic leukaemia (also known as acute myeloid leukaemia)". It further specifies that "no safe levels of benzene exposure can be recommended".⁸

In 2023, the Inpex LNG plant, located four kilometres south of Darwin's Central Business District, emitted 3,900,000 kgs of VOCs, including 6,100 kgs of benzene.⁹ Consequently, the

health of Darwinians is already being unacceptably affected by LNG processing, and risks will surely increase if the MAIP is allowed to proceed.

Air pollution

According to National Pollutant Inventory data, the Inpex LNG plant is also a significant emitter of PM2.5 and PM10, as well as various gases including nitrogen oxides, sulphur dioxides and carbon monoxide. These emissions carry extensive health risks, contributing to increased rates of asthma,¹⁰ heart disease,¹¹ cancer,¹² learning delays^{13 14 15} and poor pregnancy outcomes.^{16 17}

Modelling, based on information presented in 2021 by the Executive Director of the NT's Gas Taskforce regarding the likely industrial composition of the MAIP, indicates the development may cause increases in PM2.5 and PM10 concentrations by 233% and 391% in the Greater Darwin Region, respectively. Further, it projects that emissions of carbon monoxide may increase by 805%, sulphur dioxide by 245%, nitrogen oxides by 192% and volatile organic compounds by 233%.¹⁸

It is clear that the Middle Arm Development poses significant health risks for the people of Darwin and Palmerston which should not be overlooked.

Health effects of unconventional gas extraction in the Northern Territory:

As outlined in our aforementioned MAIP submission, there is substantial evidence that the development of Middle Arm is closely linked with expansion of the gas industry in the Northern Territory, including unconventional gas extraction (fracking) in the Beetaloo Basin.

DEA's deep concerns regarding the health impacts of unconventional gas extraction are also detailed in our submission, and for the sake of brevity, will not be repeated here. We do, however, wish to draw the Committee's attention to a recently published cohort study notable for its size and the geographic region covered.¹⁹

This study followed over 15 million elderly individuals living in all major unconventional gas development regions in the United States over a 15-year period. It showed that residing within 10-15 km of an unconventional gas development was associated with higher all cause mortality, with the risk particularly elevated in down-wind communities. This suggests that airborne contaminants represent a key exposure pathway.

Health effects of climate change:

Climate change is accepted in the medical community as being the greatest public health threat that we all face.²⁰ Climate change has diverse impacts including increased death and disease from heat waves, fires, smoke, flooding and extreme weather events, as well as the food and water insecurity, displacement and mental illness that goes with them.²¹

LNG is primarily methane, a highly potent greenhouse gas with global warming potential 28 times that of carbon dioxide.²² Analysis demonstrates that domestic emissions from fracking in the Beetaloo Basin and gas processing at the MAIP would produce up to 49 million tonnes of carbon dioxide equivalent emissions per year.²³ As such, this development poses enormous and unacceptable climate-health risks.

Conclusions

To conclude, the proposed MAIP represents a dangerous health hazard. It places the local community at an increased risk of leukaemia and extensive health harms from air pollution. As a precinct designed to facilitate expansion of the gas industry in the NT, it also enables the health harms associated with gas extraction and climate change.

To allow a project of this nature to proceed would be contrary to the ethical principles of beneficence and nonmaleficence. For those reasons Doctors for the Environment Australia strongly opposes the MAIP.

We thank the Senate Environment and Communications Committee for considering this submission and for the opportunity to appear as witnesses at the MAIP Inquiry.

Endnotes

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