LETTER TO THE EDITOR

Environmental Health Insights
Volume 18: 1–2
© The Author(s) 2024
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/11786302241228957

Liquefied Natural Gas in the Philippines: Clarifications and Interventions for Environmental and Public Health

Dalmacito A Cordero Jr

Department of Theology and Religious Education, De La Salle University, Manila, Philippines.

Dear Editor,

The Philippines' Department of Health (DOH) is facing an alarming environmental issue regarding some residents' exposure to liquefied natural gas (LNG), which is claimed to be the cause of increased respiratory and cardiovascular diseases in Batangas City. This paper presents the reported complaints of some groups in the area and clarifies the impact of LNG since some believe it to be environmentally friendly and, thus, not harmful to human health. In addition, it enumerates some interventions that should be done to address the public health issue.

Batangas City is a preferred area for many LNG projects, and 5 existing natural gas-fired power plants are located here—namely, Avion, Sta. Rita, San Lorenzo, San Gabriel, and Ilijan. The June 2022 report of the Center for Environment, Ecology, and Development (CEED) found "excessive concentrations" of phosphate, chromium, total copper, and lead along the coasts of the adjacent villages of Ilijan and Dela Paz, where ongoing LNG projects are located. Data also showed an upward trend in several parameters for water quality in Batangas Bay. Based on water quality standards of the Department of Environment and Natural Resources (DENR), the sampled water could not be categorized as Class SC or "conducive for the propagation of fish and other aquatic resources, commercial and sustenance fishing, wildlife sanctuaries, and recreational activities."[1] The Philippine Movement for Climate Justice (PMCJ) and other concerned groups had urged the DOH to declare a public health emergency in the city and investigate the impacts of LNG on the health of residents since one out of every 10 people in the areas reported cases based on data provided by the city health office.[2] The group also claimed that 5 barangays in Batangas City continue to suffer from diseases brought by local fossil gas plants and that they had submitted their petition to the Department of Health (DOH) stating that almost 4000, with kids under 5 counted at over 2000 from 2017 to 2021 are struggling with respiratory infections and cardiovascular diseases due to "dirty air" caused by fossil gas plants in the area.[3]

Shale gas is cooled to a very low temperature, and LNG is a clear, odorless, non-corrosive liquid. Mostly made of methane, it can contain up to 10% ethane and propane. It has emerged as a solution for the energy crisis in many countries that rely on imports for heat, electricity, and industrial applications. However, the shale gas infrastructure necessary for the production and export of LNG releases pollution that harms human health at every stage. LNG plants emit carbon monoxide, sulfur dioxide, and volatile organic compounds (VOCs). Studies have shown that these pollutants are associated with various health impacts, including headaches, coughing, dizziness, and other respiratory illnesses. They can also irritate skin, eyes, nose, and lungs. Long-term exposure to these pollutants can lead to heart disease, certain types of cancer, and damage to the reproductive system and internal organs. In addition, living near a pollution source increases stress, anxiety, depression, and other mental health symptoms. LNG liquefaction plants and export terminals require years of disruptive, noisy construction followed by uncertainty over the facility's long-term health and safety impacts.[4]

As many countries have already incorporated the optimum use of natural gas in addressing energy-related problems by establishing numerous terminals, it is essential to note that public health must always be the priority over any economic development. Immediate interventions are necessary, such as formulating and developing pollution control policies and strategies and discovering and deploying modern technology to monitor the efficiency of these gas terminals and plants to minimize toxic gases that are detrimental to humans. Xiao et al reported that the main environmental impact of LNG projects is the wastewater, waste gas, and waste products generated during liquefaction.[5] If various pollutants are discharged during natural gas liquefaction, they must be adequately treated, recycled, and reused, which may reduce environmental pollution. Methane, for example, is both an energy input and a pollutant that is emitted. Therefore, some liquefaction plants in Mongolia have begun to optimize the technology link, considering the recovery and reuse of methane, thereby reducing production costs for enterprises using these pollutants.[6] Another modern pollution control strategy is using electrocatalytic oxidation (EOX) treatment system, a chemical-free, turnkey contaminant removal process for wastewater. The EOX applies a high current electrical field to the wastewater that destabilizes the molecular bonds between the contaminants and the water. Through the destabilization process, the waste is removed from the water, leaving the clean water. The process does not use heat or chemicals, has very low energy use, and has a compact footprint.[7] These sample pollution control strategies must be strictly implemented by LNG plants, together with a well-planned policy standard that will guide the ordered and responsible operation of the respective plants.

REFERENCES

1. Salazar C. Verde Island passage in danger as LNG projects flock to Batangas. Rappler. Accessed January 9, 2024. https://www.rappler.com/environment/verde-island-passage-danger-liquefied-natural-gas-projects-flock-batangas-pcij-report/?fbclid=IwAR16mOdLPMEHWNtCLDpQoEW8qdr36Y_xlI2_rS6BXqP37G_XypDDxtt5PMc
2. Villanueva R. DOH probes spike in diseases. The Philippine Star. Accessed January 2, 2024. https://www.philstar.com/nation/2023/08/20/2289919/doh-probes-spike-diseases
3. Ganzon-Ozaeta T. DOH probes reported a spike in diseases linked to LNG power plant exposure in Batangas City. Rappler. Accessed January 9, 2024. https://www.rappler.com/nation/luzon/department-health-investigation-diseases-exposure-liquefied-natural-gas-power-plant-batangas-city/
4. Environmental Health Project. Liquefied Natural Gas (LNG): health and climate impacts. Accessed January 3, 2024. https://www.environmentalhealthproject.org/post/liquefied-natural-gas-lng-health-and-climate-impacts#:~:text=LNG%20plants%20emit%20carbon%20monoxide,eyes%2C%20nose%2C%20and%20lungs
5. Xiao F, Shi L, Jing X, Luo X. Main points and methods of engineering analysis in environmental impact assessment of LNG project. *Chem Eng Oil Gas*. 2013;42:424-428.
6. Yuan X, Zhang B, Liang R, Wang R, Sun Y. Environmental impact of the natural gas liquefaction process: an example from China. *Appl Sci*. 2020;10:1701-1716.
7. Ground Effects Environmental Services Inc. Electrocatalytic oxidation (EOX). Accessed January 8, 2024. https://groundeffects.org/ge-products/electrocatalytic-oxidation#:~:text=Via%20proprietary%20electrodes%2C%20the%20EOX,removed%2C%20leaving%20the%20clean%20water

RECEIVED: January 3, 2024. **ACCEPTED:** January 11, 2024.

TYPE: Letter to the Editor

FUNDING: The author(s) received no financial support for the research, authorship, and/or publication of this article.

DECLARATION OF CONFLICTING INTERESTS: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

CORRESPONDING AUTHOR: Dalmacito A Cordero Jr, Department of Theology and Religious Education (DTRE), De La Salle University, Taft Avenue, Manila, Philippines. Email: dalmacito.cordero@dlsu.edu.ph