

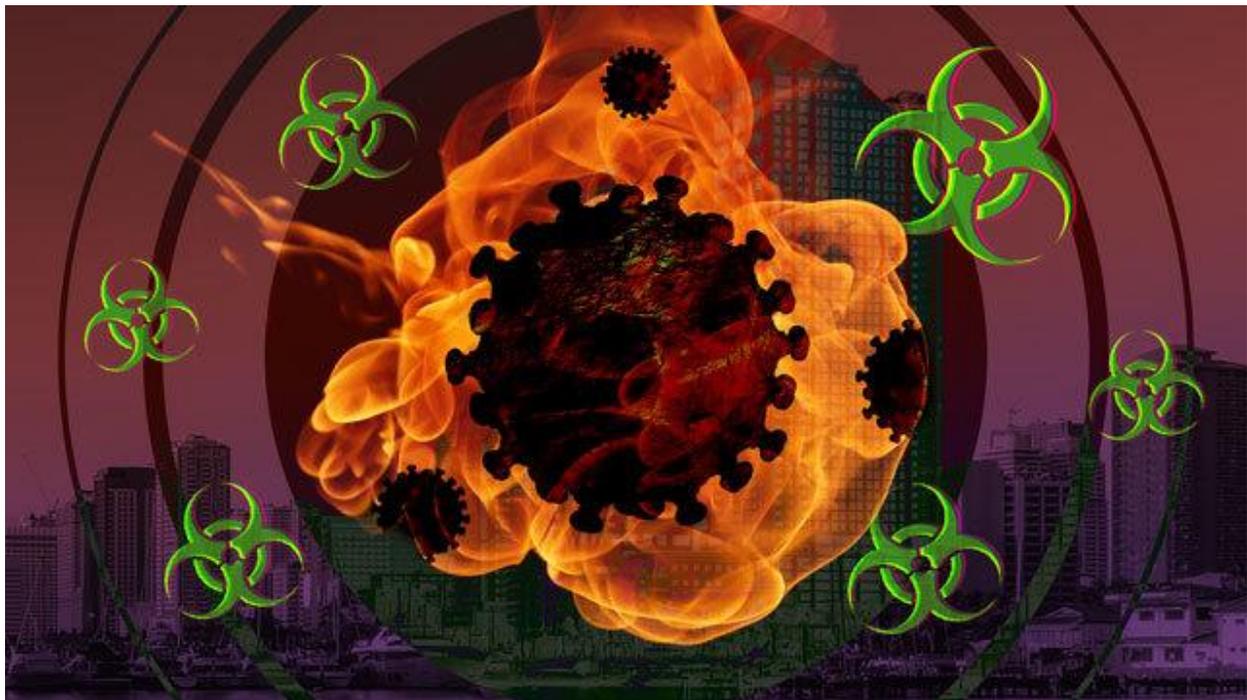
[ANALYSIS] Incineration of coronavirus wastes will worsen the situation

Much of health care wastes are single-use materials such as disposable gloves, gowns, face masks, and IV bags, which are mostly plastics made from fossil fuels. When burned, they release toxic substances.

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Published 3:42 PM, April 10, 2020

Updated 3:42 PM, April 10, 2020



A recent memo by the Environmental Management Bureau (EMB) of the Department of Environment and Natural Resources (DENR) violates the law, undercuts safer and cheaper options, and poses a threat to public health and the environment.

On March 26, 2020, the EMB issued a memorandum that allows incineration for all **COVID-19**-related health care wastes collected during this period of enhanced community quarantine. While purporting to ensure continuity of operations in public

health and safety, the memo will only make the situation worse. (READ: [How do we safely dispose of coronavirus-related health care waste?](#))

Violation of RA 8749

The memo issued and signed by Engineer William Cuñado, EMB OIC-Director, directs all EMB regional directors to use thermal treatment by incineration as a mode of disposal with total disregard for RA 8749 or the Philippine Clean Air Act. Section 20 of the Clean Air Act bans incineration. Even the Supreme Court's orbiter dictum (opinion that does not set precedent, is not binding, and is unenforceable) in the MMDA v Jancom case does not annul the prohibition. The memo is in clear violation of the la

Disinfection and treatment systems

All the "alternative" treatment modes in the EMB memo with the exception of incineration and crematoria have already been in use for medical waste treatment for decades. Disinfection through chlorination and sterilization using an autoclave or hydroclave are all in the Philippine Department of Health (DOH) Health Care Waste Management Manual that hospitals have been using since the manual's early version in 2004. The latest version of the manual (2012) also includes microwave treatment, disinfection by hydrogen peroxide, and methods of encapsulation and burial, which are not even mentioned by Engr Cuñado.

The only thing new in the memo is permitting incineration and use of crematoria. It appears that the EMB memo intends to bypass the Clean Air Act by allowing a process which emits poisonous and toxic fumes while introducing the use of crematoria for health care waste disposal.

Disinfecting COVID-19 contaminated materials

Despite its high transmissibility and case fatality rate, the virus responsible for COVID-19 is ironically enough easily destroyed by decontamination. The COVID-19 coronavirus belongs to a group of viruses called enveloped viruses that are among the most sensitive to chemicals and heat compared to other disease-causing microorganisms. The COVID-19 virus is readily inactivated by such disinfectants as 0.1% sodium hypochlorite (the active ingredient in Zonrox, Winrox, and other bleach products), 70% ethyl alcohol, 50% isopropyl alcohol, and 0.5% hydrogen peroxide.

The WHO already recommends these and other disinfectants for clinical laboratory waste. The WHO also recommends disinfecting COVID-19-contaminated linen in a diluted bleach solution of 0.05% hypochlorite for 30 minutes. The DOH Manual calls for decontamination of infectious waste by 5% hypochlorite, which is a safe concentration

since it is more than 10 times higher than what is needed to inactivate the COVID-19 virus.

Coronaviruses such as the COVID-19 virus are also easily destroyed by simple soap and water because of the nature of enveloped viruses. Soap molecules act as chisels that break open enveloped viruses and trap their fragments in structures called micelles that are formed by soap. The WHO, DOH, and other health agencies keep emphasizing washing hands with soap for 20 seconds and rinsing with water as a simple but effective method to stop transmission of the COVID-19 virus.

Furthermore, past studies have found that other coronaviruses are destroyed by heat at only 56°C (133°F) for about 45 minutes. It is likely that the COVID-19 coronavirus will also be destroyed at 56°C, which by the way is the temperature of the hot water setting of many commercial washing machines. The WHO adds a safety factor by recommending washing contaminated clothes, bedding, and towels of COVID-19 patients in hot water with detergent at 60-90°C. Boiling in water would destroy the virus even faster.

Microwave units used for infectious waste require enough water to produce steam and operate around 100 degrees Celsius to achieve high levels of disinfection in about 30 minutes. Autoclaves, which are basically pressure cookers operating at temperatures between 121-134 degrees Celsius, reach sterilization levels (the same levels used to sterilize surgical instruments) and are far more than adequate to handle COVID-19 wastes.

Since coronaviruses can be destroyed at temperatures even below the boiling point of water (100°C), incinerating infectious wastes at 850 to 1200°C is overkill and completely unnecessary, especially since cheaper methods as those mentioned above are readily available on-site. Unlike alcohol, ordinary bleach is still found throughout the country.

Incinerating health care waste produces toxic substances

Opposing incineration goes beyond the legal requirement and has everything to do with health. Much of health care wastes are single-use materials such as disposable gloves, gowns, face masks, and IV bags, which are mostly plastics made from fossil fuels. When burned, they release toxic substances, including respirable fine particles, heavy metals, carbon monoxide, and acid gases, all of which adversely impact the respiratory system. (READ: [The time has come to break free from fossil fuel](#))

COVID-19 is a severe acute respiratory disease that will be exacerbated by respiratory pollutants. Many patients that experience severe and even fatal outcomes for COVID-19 are those with other health problems including chronic obstructive pulmonary disease

and other respiratory disorders. Many of the pollutants from incinerators are also known to suppress the immune system. Thus, creating air pollutants by incinerating infectious wastes will further compromise COVID-19 patients in health care facilities and communities.

The Clean Air Act prohibits the burning or incineration of medical wastes in part because incineration creates the most toxic chemicals known to science, dioxins and furans, which remain in the environment for decades to hundreds of years. Dioxins and furans are linked to various types of cancers, reproductive disorders, birth defects, endocrine disruption, suppression of the immune system, and other health problems. The Philippines does not have the capacity to continuously monitor incinerator emissions of dioxins and furans. This means it is unlikely that emission limits for dioxins and furans will be enforced even without a pandemic.

Large amounts of dioxins and furans are also found in incinerator ash. This is why the ash must be safely transported and disposed of in hazardous waste landfills according to the Stockholm Convention for Persistent Organic Pollutants, to which the Philippines is a party. The guidelines of the Convention even recommend catalytic treatment of ash, solidification prior to landfilling, or use of double-walled containers. Since the country does not even have enough hazardous waste landfills, toxic incinerator ash will probably end up in dumpsites or rivers.

Protecting people's health

The EMB's role should not be to negate the protection of public health and the environment by undermining the Clean Air Act and the DOH Health Care Waste Management Manual. What hospitals and other health care facilities should do is to ensure compliance with the DOH Manual and where possible, strengthen their waste management systems. Rigorous waste segregation and proper handling, storage, and transport of health care waste should be strictly followed. The correct use of personal protective equipment should be enforced.

The COVID-19 pandemic should not be an excuse to return to outdated and polluting disposal methods like burning and incineration. Continued use of safe and environmentally sound treatment methods is more protective of public health. –

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