

The Goodness of Creation - 3

The air we breathe

Mathew Koshy Punnackadu

On 4th March 2023, a massive fire broke out at the Brahmapuram waste plant in the Indian city of Kochi, Kerala. The fire spread to over 70 acres of the 110-acre Brahmapuram plant, having a volume of 5.5 lakh tonne waste. The plant is owned and operated by Kochi city authorities and is known for the massive mounds of waste on its premises. According to a report, Kochi city produces more than 390 tonnes of waste daily. 64 percent of this is biodegradable, while the rest is plastic and other non-biodegradable materials. The plant, inaugurated in 2008 to manage solid waste, was eventually converted into a landfill.

As there were plastic materials in the waste, the fire force took more than ten days to douse the fire!

The fire outbreak at the waste disposal plant at Brahmapuram, prompted me to explain the consequences with an imaginative story.

I approached God and complained, "The toxic smoke from the waste dump yard at Brahmapuram has already spread to three districts in Kerala, causing breathing difficulties for all creations. All your creations are suffering due to air pollution¹. Are you not aware of this?"

God didn't answer. Instead, He just looked at Noah. Noah became confused because God was silent. To compel God to speak, I added. "Smoke can have serious health effects on our lungs and heart. Inhaling harmful smoke can inflame lungs and airways, causing them to swell and block oxygen. Here the situation is more serious. Tons of plastic waste accumulated in Brahmapuram is burning. When plastic burns, toxic chemicals like Dioxin and furans are produced. Dioxins are called persistent organic pollutants (POPs), meaning they take a long time to break down in the environment. Dioxins are highly toxic and can cause cancer, reproductive and developmental problems, damage the immune system, and interfere with hormones. Dioxins are found worldwide in the environment, accumulating in food chains and concentrating mainly in the fatty tissue of animals. God, your creation in Kerala will suffer from Cancer in the coming years".

At last, God responded, "Whatever things I created, have an intrinsic value, purpose and interconnection. The solution for all the related problems has the solution in that system itself. Plastic is a material created by humans. They must find a solution for the disposing of it. But I can give you some clues only".

"What is it?"

"Ask the animals; they will teach you, or the birds in the sky; they will tell you (Job 12:7-25). They know how to treat their wastes.

Through decentralisation, they try to divide the burden equally in all places. Waste is decomposed wherever it is and is converted into food for plants at that place."

From the imaginative story, two questions arise. Who is responsible for the pollution? The media affirm that the corporation (civil authority) is responsible for this. No, we are accountable for this. The

second question is, "Is it right to pollute the air God has given freely to the creation".

Most of the products in the supermarkets are in plastic covers. After purchase, they will wrap it in another plastic bag. When we reach home, we will put the throwaway plastics and the biodegradable products into another plastic bag and hand over it to the corporation for processing. As it is beyond the processing plant's capacity, they dumped all the plastic bags on a vast 100-acre land. Plastic products are petroleum products, so spraying water cannot easily extinguish the fire.

The first and foremost thing to reduce this pollution is to ban throw-away plastics. We must use cloth-bags to counter plastic bags. Throw away plastics may reach our homes if they are available in the market. In that case, clean it and send it to the recycling unit. The degradable products must be processed in our home itself.

Biodegradable wastes must be processed near the generation source. Unnecessary transportation or off-site composting should be avoided. Decentralised waste management ensures better waste segregation through better monitoring and quick feedback. The level of segregation defines the cornerstone for any waste management project; with efficient segregation, half the battle is won already.

Improper bio-degradable waste processing is due to ignorance of the power of nature or the goodness of creation. Composting is a natural process. Machines can only aid in transforming waste into more manageable or quickly compostable form, but ultimately the process of composting is to be carried out by microorganisms. Microorganisms are the wonderful creation of God to process all the biodegradable matter on the earth.

Decomposition of wet waste can happen either in the presence of air (Aerobic) or in its absence (Anaerobic). Decomposition in the absence of air causes methane generation. It is good if the methane is tapped as an energy source, like in a bio-methanation plant; otherwise, the composting solution should be aerobic to the most significant extent possible to minimise methane generation.



Dr. Mathew Koshy Punnackadu is an internationally renowned environmentalist. He is the Hon. Advisor, Department of Ecological Concerns, CSI Synod

In short, we must avoid throw away plastics. We have to Advocate or pressurise the government to ban throw-away plastics. We must understand the goodness of nature to convert degradable waste into compostable form.

The American Lung Association estimates that a person consumes 7,570 litres of air daily. The air we inhale is about 20 per cent oxygen, and the exhaled air is about 15 per cent oxygen, so about 5 per cent of the air volume is consumed in each breath and converted to carbon dioxide. Therefore, humans use about 378 litres of pure oxygen per day. As per market value, it may come to Rs. 3000. We need to know the oxygen value to use oxygen worth around Rs 3000 per day. We can understand the importance of oxygen only in hospitals with artificial respiratory units. All creatures in this world need oxygen. As it is a gift from God, we use it without knowing its value. Another aspect is that we will be healthy if we get sufficient oxygen regularly.

We are polluting the air we breathe. Air pollution levels remain dangerously high in many parts of the world. New data from the WHO shows that 9 out of 10 people breathe air containing high levels of pollutants. Updated estimations reveal that around 7 million people die yearly from exposure to fine particles in the polluted air, that penetrate deep into the lungs and cardiovascular system, causing diseases including stroke, heart disease, lung cancer, chronic obstructive pulmonary diseases, and respiratory infections, including pneumonia. WHO recognises that air pollution is a critical risk factor for noncommunicable

diseases (NCDs), causing an estimated one-quarter (24%) of all adult deaths from heart disease, 25% from stroke, 43% from chronic obstructive pulmonary disease and 29% from lung cancer.

The toxic smoke from the waste dump yard at Brahmapuram has spread all over the area. According to the Kerala Pollution Control Board website data, the PM 2.5 and PM 10 level in the air in Kochi were above the prescribed standards.

What is the long-term impact of this Brahmapuram tragedy? People may forget about this fire and smoke shortly. The impact of Dioxin or furans will manifest in human beings only after some years. It will end in Cancer or some other fatal diseases. It is an environmental hormone that disrupts our internal signalling systems. Hence in addition to its well-known carcinogenic properties, dioxin alters the immune system at very small doses. Exposure of a pregnant rat to a single tiny dose of dioxin can permanently alter the sexual hormones and development of their male offspring, including testosterone and sperm counts².

The sexual hormone levels had altered in US Chemical workers exposed to dioxin³. In January 1991, the US National Institute of Occupational Safety and Health (NIOSH) published a landmark paper which found increased cancer mortality in chemical workers exposed to dioxin, significantly more than one year of exposure and more than twenty years of latency. In September 1991, an international Symposium⁴ on dioxin was held in North Carolina, where world-class dioxin experts presented papers available as proceedings of the first Citizens' Conference on Dioxin. Dioxins and furans are produced when there is any burning of the trash containing Chlorine. If anybody is exposed to dioxin, it has a half-life of seven years in the body⁵. In short, if dioxin enters the body, it will be there for a long time. Dr. Kees Olie⁶ and his team found elevated levels of dioxin and furans in the cows' milk near an incinerator in Rotterdam. The government of the Netherlands banned the sale of milk in nearby areas of the Incinerator. Farmers were not allowed to sell cows in that area during the nineteen eighties. Dioxin was detected in the grasses near the incinerators in developed countries. Hence incinerators are not allowed in populated areas.

Because of the burning of plastic and trash in Brahmapuram, it is natural to assume that dioxin and furans should have contaminated water, vegetables, and other food items. In future, this may become a tragedy equivalent to endosulfan poisoning in Kasaragod.

Big corporate hospitals with sophisticated instruments treat wealthy people in Kochi. What about the poor people? Air pollution threatens us all, but the poorest and the most marginalised people bear the burden. Who created this air pollution? Waste from the middle-upper class is responsible for the present tragedy.

When cancer is increasing in megacities, remember air pollution is one of the culprits. Polluting air, God's gift, is a sin. The waste generation of the middle and upper classes threatens all creations, ultimately, the poor and the marginalised who are innocent suffer the most.

End notes

¹ Spread over 110 acres, the Brahmapuram waste treatment plant is situated around five kilometres away from Kochi's Infopark. No waste is actually treated at the plant as it's more of a dumping yard. Municipal solid waste of 5 municipalities (Aluva, Angamaly, Kalamassery, Thrikkakara, and Tripunithura) and 2 panchayats (Cheranalloor and Vadavucode-Puthencruz) and the solid waste of Kochi corporation are handled by the Kochi Corporation and taken to Brahmapuram plant. The plant receives 383 tonnes of waste every day.

² Malby, T.A., R.W. Moore, D.L. Bjerke, R.E. Peterson. The Male Reproductive system is highly sensitive to In Utero and Lactational TCDD Exposure. Banbury Report 35: Biological Basis for Risk Assessment of Dioxins and Related Compounds 1991.

³ From the presentation of Dr. Paul Connect. Chemistry Professor, St. Lawrence University, NY.

⁴ Proceedings of First Citizens Conference on Dioxin published in December 1992.

⁵ Dr. Alastair Hay Toxicology Department, Leeds University, England. Author of The Chemical Scythe

⁶ Dr. Kees Olie. Research Scientist, Laboratory of Environmental and Toxicological Chemistry, University of Amsterdam.