Ahmad Miji *of Kampung Labohan Dagang in Dengkil, Selangor,* ***getting water from a lake after a supply disruption*** *at the Sungai Langat water treatment plant.* **Bernama pix**

Better to regulate pollution sources

LOWER VOLUME: The dry season likely contributed to elevation of ammonia in rivers

MUCH attention has been given to the closure of the Cheras Batu 11 and Bukit Tampoi water treatment plants. The level of ammonia in Sungai Langat at Cheras Batu 11 was reported to have reached 6.4mg/l, whereas at Bukit Tampoi, the level was at 4.2mg/l. These were beyond the acceptable 1.5mg/l.

The issue of ammonia, or more scientifically accurate ammoniacal nitrogen or total ammonia nitrogen (TAN), contamination in Klang Valley rivers is long-standing.

Throughout the years, a number of cases have been reported in Sungai Selangor and Sungai Langat catchments. The circumstances and source may vary, but in either case, it boils down to the same issue; pollution.

TAN originates from many pollution sources such as sewage, industries, palm oil mills, wet markets, landfills, sullage, etc. Some of these pollution sources are located upstream of water intake points. Effluent from these sources enter the river and mixes with river water. The river water is then pumped into water treatment plants to be treated and supplied to consumers.

Under certain conditions, the TAN levels may become too high that it becomes a problem for water treatment plants.

Most water treatment plants in Malaysia employ "conventional treatment" systems incapable of removing TAN or can only remove a fraction of it. Hence, if TAN in the river becomes too high, these plants have to shut down. If the plants continue to operate; there would be a few imminent risks.

ONE, TAN may enter the distribution network and reach people's homes. In this instance, the tap water becomes "smelly"; emitting a pungent odour and quite distasteful;

TWO, studies have shown that TAN may react with chlorine (from the disinfection stage in the treatment process) to produce chloroamines. This substance presents a potential health risk to consumers.

The level of TAN in a river varies, depending on several factors, such as the weather. In the case of Cheras Batu 11 and Bukit Tampoi water treatment plants, the dry season likely contributed to the elevation.

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Each river has a unique "waste assimilative capacity" or WAC. The latter is roughly defined as the ability of the river to "take-in" pollutants without becoming polluted itself. One of the main components of WAC is dilution. Generally, the more water that is present, the more diluted pollutants (such as TAN) become.

Because of the current dry spell, the volume of water in Sungai Langat is significantly reduced, hence reducing its dilution capability and WAC. This in turn, results in elevation of TAN as seen at the Cheras Batu 11 and Bukit Tampoi treatment plants.

In the short term, there are a few limited options available. Relevant authorities could issue directives or seek cooperation from effluent discharging premises to reduce the amount of volumetric discharge from their premises by at least half to three-quarters.

This will reduce some TAN input, hence would also decrease its level in the river. The legislative (and operational) feasibility of this need has to be determined, but as they say, desperate times call for desperate measures.

Unfortunately, since not all pollution sources are governed under existing environmental regulations, a complete reduction would still not be achievable.

Water service providers should also look at more effective TAN removal technologies. Understandably, there would be a cost implication to this, but given the limitations of the water resource framework (with regards to pollution) some serious thought.

The above are only stop-gap measures and cannot be considered environmentally sustainable. Even if TAN could be removed using more advanced treatment technology, the levels in the river still have to be re-mediated. This is because elevated levels of TAN can cause other ecological damage and harm to aquatic organisms.

To do this, existing laws and regulations have to be amended to be more WAC-oriented. The ability of each river to take in waste should be considered during the issuance of discharge licences.

Current environmental legislation does not place much emphasis on the quantity of pollutants that is being discharged. Emphasis instead, is placed on the "quality" of the effluent. To maintain good water quality, irrespective of seasonal changes, both quantity and quality of pollutants that enter the water column should be thoroughly controlled and regulated.

The combination of the two — quantity (in terms of volume/flowrate) and quality (concentration) is known as "pollution load". To maintain good water quality, the pollution load should always be less than the WAC. This approach has been adopted in countries like the United States to better manage the water quality of their streams and rivers.

In the case of Cheras Batu 11 and Bukit Tampoi water treatment plants, the total pollution load was large enough that it breached the WAC (for water supply) during this dry season.

For even more effective environmental management, all pollution sources should be regulated in accordance with the WAC approach. Unfortunately, even until today, there are still a number of pollution sources that are not thoroughly regulated.

Muhd Fariezan Shah Abdullah, *4, waiting to collect water for his father, who has diabetes.*

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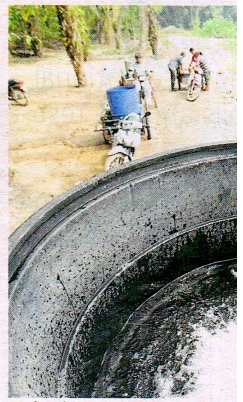
Water, water, where art tho

BETTER MANAGEMENT: We are vulnerable if we depend on our reservoirs and treatment plants like the old days'



Malaysians ***use an average o****than a Filipino (175), a Singapo*

I HAVE seen it before — water containers along the roads. People waiting for water. It was back in the 70s in Muar. Along the Muar-Batu Pahat road, *tempayan* (water jars) of all shapes and sizes became part of the landscape. It was a two-year ordeal. Visitors would be bemused but there was nothing amusing about scarcity of water. Water is a serious matter.

This is Malaysia, where rains come in abundance. To say we are soaked most of the time is an overstatement, but we receive an average of 4,159mm of rain a year. That has caused floods, landslides, you name it. The Klang Valley, in fact, most parts of the peninsula, have been without rain for some weeks. On most days, we see a cloudless sky. Strange, even eerie, but true.

Johan Jaaffar

For many in the Klang Valley, there is a sense of déjà vu. It had happened before in the 90s. But back then, the disruptions were mostly caused by broken pipes or contaminated rivers flowing into reservoirs and certainly not on this scale. The truth is, we have never experienced a situation where almost all major reservoirs in Peninsular Malaysia reached critical water levels.

My *kampung* folks in Sungai Balang Besar, Muar, had been using the river for bathing and washing, and rain water collected in jars for drinking. Or wells dug deep. In front of every house, there was a small hut to provide comfort for the women bathing *berkemban* (with their sarung covering the body from the chest).

There was always a small jar at the *tangga* (wooden stairs) of every house, where one simply scooped the water with a *tempurung* (dry coconut shell) to wash one's feet. Life was a lot simpler and less complex back then. We had accepted that way of life. No one was complaining. The river was c and water was flowing. Drou were seldom heard of.

The pipes came to the *kamp* in 1977. We were all excited. Ba the 60s and 70s, *pembangunan* velopment) was about *tandas c* (flush toilets), piped water and tricity. Electricity came to my lage in 1982. Piped w came first. The jars denly disappeared. too, the huts. And *kampung* folks tasted ter from the pipes — heavy taste and sme chlorine. Again, t didn't mind.

But it did not last. H ly six months later, the w stopped. Apparently there wa oversight on the part of the p ners — they provided the pipes did not prepare enough of t huge structures to store and su water.

This time, the entire district affected. Water supplies to dents along the Muar-Batu P road, too, were severely cu wasn't about water rationing. T wasn't any water. Water tan were sent to all the affected are was a sight to remember.

Luckily for us, we can go ba our old ways. The river bec alive. Huts were rebuilt and were dug. The water jars were lifeline. My mother cut the p and used it to hang sheets of pressed rubber to dry out of a and frustration..

What have we learned from the water crisis? Hardly nothing. have we learned from the experien water rationing in the Klang V before? Literally nothing.