



trema that the fundamental habitat qualities that support our local biodiversity would be lost and we would be left with a degraded ecosystem," they cautioned.

The group also revealed that they had, on Dec 26 and 27, monitored the 24-hour PM10 levels in Bukit Goh, Beserah (just outside residents' homes), and the Gebeng Industrial Estate, adjacent to Kuantan Port.

The result: the 24-hour PM10 levels recorded outside the houses were at 222.13 g/m³ (Bukit Goh) and 164.05 g/m³ (Beserah).

The sampling carried out in Gebeng showed a reading of 276.79g/m³. All three exceeded the standard levels underlined under the 24-hour Malaysian Ambient Air Quality Standard for PM10, which is 150 g/m³.

Samples at the house in Beserah, located close to a bauxite mine and along a bauxite transport route, were taken on a day when the transportation of bauxite had ceased.

PM10 dust can easily penetrate the human lower respiratory tract and cause or trigger respiratory problems like asthma, lower respiratory tract infections, pneumonia, chronic bronchitis and emphysema. Depending on the chemical content of the PM10 dust, they may also experience other health problems.

The scientists highlighted the NST's August reports on the high levels of arsenic in fish caught in Sungai Pengorak. The arsenic con-

tent of three fish samples ranged from 70.8 to 104.5g/kg, more than a staggering 70,000 times the permissible limit for arsenic in fish and fishery products of 1mg/kg, under the Malaysian Food Regulation 1985.

"We should be reminded that the lack of evidence of destruction and harm to the environment and humans should not be used as an excuse not to act or to delay action.

"When there is potential harm to the environment or humans, we should be proactive and not reactive in our approach.

"This approach of harm avoidance is based on the Precautionary Principle, which states that when human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm."

They said the authorities should not dismiss such reports without investigating for themselves.

"A recent news report in the NST (Dec 29) showed a disturbing photo of a young man collecting clams (*remis*) from the bauxite-contaminated Sungai Pengorak and two children playing in the bauxite-contaminated sea waters off Batu Hitam beach.

"If heavy metals are present in the river water as we strongly suspect, they will be easily concentrated in the clams, which are bivalves and filter feeders.

"Wading and swimming in the contaminated waters are also dangerous as heavy metals in the water can penetrate human skin, eyes and mucous linings. Swimmers will also ingest water," they warned.

While the state authorities have played down the risks posed by bauxite mining, the state Fisheries Department had, on Dec 31, warned the public against consuming seafood obtained from bauxite-contaminated waters off Pahang.

Its director, Adnan Hussain Adnan, also advised against fishing, which he said was not suitable in these areas due to the high level of turbidity. It is understood that the group will also forward their report to Putrajaya.

"It is absolutely imperative that the state government address the issues by controlling every single mining operation at the source. Only then can they be made sustainable in the long run.

"A populated area cannot be transformed into a huge mining area without serious consequences to the population of 400,000.

"The state government cannot abdicate its responsibility to look after the well-being and health of these people.

"Justifying extensive mining in a well-populated area simply because they give income to a small group of people is totally wrong and unheard of in this day and age.

"In developed countries, this will undoubtedly result in civil suits," they said.

Page 1 pic: Red sediment off the coast of Tanjung Gelang believed to be washed from a bauxite ore stockpile near Kuantan Port. Pic courtesy of Pertubuhan Pelindung Khazanah Alam Malaysia

Scientists give NST a peek at report for Pahang govt

NST 3/1/2016 Pg. 5

Bauxite mining

Residents living close to bauxite mines risk being exposed to dust and mud containing toxic heavy metals. Bauxite washing is done near rivers as it is convenient to get water for washing. The sediment-laden wash water flows back into the river. Some of the smaller streams have been dammed up for this purpose.

Both the extraction of river water and heavy pollution of rivers are illegal activities, which need to be stopped.

The wash water, which also contains high levels of heavy metals, will enter the river system and contaminate the raw water that feeds water treatment plants downstream.

Heavy metals in the water will be available for uptake by aquatic organisms, which may become food sources for the public.

After washing, the bauxite ore is transported to the Gebeng Industrial Estate to be stockpiled before being shipped off to China via Kuantan Port. The bauxite ore is not covered and can generate windblown dust. There is also no proper drainage system around the stockpile. When there is heavy rainfall, runoff laden with bauxite sediment flows into nearby rivers and residential areas.

Atmospheric environment

From the bauxite mines to the bauxite washing sites and finally to the Gebeng Industrial Estate and Kuantan Port, bauxite ore is transported by lorries which use unpaved as well as regular public roads. Residents are exposed daily to bauxite dust from the lorries which, when suspended in the air, permeates their homes. There have been numerous complaints of respiratory and skin rash problems from people living along these transport routes.

Road safety

There have been several road accidents involving lorries transporting bauxite, some of which were fatal. Even though they may be using designated routes, these public roads go through neighbourhoods and urban areas. Some of the accidents are caused by operators trying to rush their loads to the port, as they are paid according to the number of trips they make.

River water quality

Mining and related activities are taking place in the Sungai Kuantan basin. Water from Sungai Kuantan and its tributaries are abstracted and treated for

domestic water supply. Several water intake points are located downstream of the bauxite mines. The mining activities are causing severe water pollution. Loose earth is washed into the rivers during rain, increasing the levels of suspended solids and turbidity. Besides making the water murkier, siltation and sedimentation also decrease water depth; particularly in the case of smaller streams. This will damage aquatic habitats, elevate flood risks and potentially disrupt the operations of water treatment plants. Deposits on road surfaces during the transport of bauxite will also be picked up by runoff. The process of "bauxite washing" generates effluent, which also enters watercourses. The heavy metals that enter the river system can adversely affect human health if consumed over an extended period of time.

In fact, on one occasion, data from the Department of Environment showed mercury levels upstream of the Bukit Goh intake to be 0.0093mg/L. This is almost 10 times higher than the permissible limit of 0.0010mg/L for raw water sources adopted by the Health Ministry. The levels of mercury, arsenic and manganese in other rivers were also high. Conventional water treatment systems are not designed to effectively remove these metals. There is a risk that these metals will escape the treatment plant and enter the water distribution network, reaching people's drinking water.

Aquatic ecosystem

Water quality degradation caused by uncontrolled bauxite mining will have a major impact on aquatic biodiversity. The high sediment loads and heavy metal contamination that accompany bauxite mining are destructive to these populations. Sediment can choke fish by clogging their gills, bury bottom invertebrates that are an important part of the food chain and prevent photosynthesis by cutting sunlight penetration. Those that survive will be poisoned by the heavy metal contamination.

Flocculation of these sediments is likely to occur in estuary and nearshore areas, strangling mangroves and coastal vegetation, as well as burying benthic invertebrates that are an important part of the marine food web. The net result is nearshore fishermen will have to accept losses in their catch.

→ Turn to Page 6

