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EDITORIAL DIARY

HAZE PROBLEM IN ASEAN: CAUSES & CONCERNS

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1. INTRODUCTION

Biomass fires occur whenever there is enough heat applied to organic fuel with the presence of oxygen. Smoke haze is caused by vegetation and peat-swamp fires to produce major concern for its negative impact on regional air quality and health. Burning in palm oil plantations causes haze in populated cities in Indonesia, Malaysia & Singapore. Smog and particulate air pollution over Southeast Asian large cities mostly come from peat-swamp fires from Indonesia. The large emissions of smoke from central and southern Sumatra and Kalimantan that cause air quality issues in Singapore are coincident with ongoing deforestation and expansion of oil palm. The rates of forest cover destruction by 1.45 million hectares per year during 2000-2010 were contributed largely with the appearance of oil palm plantations. The expansion of large-scale oil palm plantations, which have been associated with the use of fire for land clearing activities has been pointed out as the key driver of future fires.

The haze originates from Indonesia. It is due to open burning of forest and peat-land. Open burning can be controlled through deployment of water bombers whereas peat-land fires are more difficult to control as these fires are subterranean in nature. As the haze is carried by the seasonal monsoon winds, the haze problem assumes both regional and international dimensions. Here is where domestic environmental laws are limited in their capacity to deal with the problem. We need some kind of regional environmental mechanism in place and this brings into focus the ASEAN Transboundary Haze Pollution Agreement ("THPA"). The THPA was signed by all ASEAN member states on 10 June 2002 in Kuala Lumpur during the World Conference on Land and Forest Fire Hazards. It came into force on 25 November 2003, sixty days after the deposit by Thailand of the 6th instrument of ratification by Thailand with the Secretary-General of ASEAN. But strange to say it took another eleven years for the tenth and final ASEAN member, Indonesia, to ratify the THPA on 20 January 2015.

In 1997, the haze in ASEAN was edging to catastrophic proportions. The ASEAN Ministerial Meeting on Haze was established the same year to give haze a special importance in the organisation. The Meeting formulated the Regional Haze Action Plan ("RHAP") whose primary objectives includes inter alia, establishing operational mechanisms to monitor land and forest fires, and strengthening of regional monitoring mechanisms. In 1998, the ASEAN Summit issued the Hanoi Plan of Action which called for the full implementation of the RHAP by 2001, and in 1999, ASEAN adopted a zero-burning policy, following which dialogues and workshops were convened to promote such policy among plantation owners and timber concessionaires. However, there was no regional enforcement mechanism and RHAP was not binding on ASEAN states.

Indonesia, Singapore and Malaysia are choking under a thick haze of wildfire smoke caused by the annual burning of land for the production of pulp, paper and palm oil on the Indonesian islands of Sumatra and Kalimantan. The new haze crisis has arisen despite Indonesia reportedly implementing stricter land management restrictions on agricultural companies, including a nationwide moratorium on the cultivation of peatland, where fires emit ten times more dangerous gases and are difficult to extinguish. The haze is so bad it's been described by the Indonesian Meteorology, Climatology and Geophysics Agency (BMKG) as a "crime against humanity." Schools are closed, transport disrupted and half a million cases of acute respiratory infection have been recorded since July. The annual burning churns out thick smoke across parts of Southeast Asia, but this summer's haze is the worst it's been for 20 years. Most of the forest fires that are contributing to this massive environmental disaster are started illegally by farmers who slash and burn peat forest to make way for agricultural land. While rain showers have provided relief to some

of the affected areas in Sumatra and Kalimantan, a core area of dense haze remains in Central Kalimantan.



Figure 1: Air Pollution Index, Malaysia 2019

Less deforestation also appeared to reduce the environmental impact, with US National Oceanic and Atmospheric Administration (NOAA) satellites noting significant declines in hotspots in 2017 and 2018 and even through the first six months of this year, in stark contrast to what has been happening in Brazil's Amazon Basin.

Earlier this week, Kuala Lumpur had the most polluted air on the planet when levels plunged to "very unhealthy", only to be over taken by fellow Malaysian city, Kuching, which is badly suffering.

How does the haze affect us?

The biggest hazard of the haze is the fine particulate matter (PM) suspended in the air. Particulate matter, especially those of PM_{2.5} can easily be inhaled into our lungs. This refers to particles that are smaller than 2.5 microns in diameter. This can give rise to acute symptoms such as cough, wheezing, shortness of breath and a feeling of tiredness and weakness.

Long-term exposure to the haze and particulate matter can lead to the development of medical conditions such as bronchitis and a higher incidence of lung cancer. Thus it is best to stay indoors during hazy situations when the PSI is at unhealthy levels. If you have to go outdoors for long periods, an N95 mask can help reduce your inhalation of particulate matter.

Those at highest risk of being affected by the haze should remain indoors. These are people with pre-existing heart or lung disorders as exposure to air pollution is known to worsen these conditions. Likewise, children and the elderly who have smaller lung reserves should avoid prolonged exposure to the haze.

What symptoms can the haze cause?

Exposure to the haze can lead to symptoms of bronchitis. These symptoms can be just like symptoms of asthma – wheezing, cough, chest discomfort and shortness of breath. If the symptoms are severe, you should consult a doctor immediately. If symptoms are mild, they may abate or resolve with rest (indoors) and avoidance of the haze.

Fine particles are matter foreign to the body (they are like microscopic soot particles). Inhaling the haze is like inhaling smoke – irritation of the sensitive lining within the nose and throat occurs. Symptoms tend to get more serious when the irritation occurs deeper than the nose and throat, especially when the lower air passages (trachea and bronchi) are affected.

What should people with asthma or other respiratory illnesses do during the haze period?

If your symptoms are mild and you are healthy, simply avoiding the haze by staying indoors with the windows and doors shut, and turning on an effective air purifier should be sufficient. If your symptoms are more serious or you are unsure how badly you are affected, it is best to consult with a physician.

It is not advisable to self-medicate or use inhalers that you are not familiar with. For example, Seretide is an asthma medication that contains steroids and a long-acting bronchodilator medication. It is a prescription-only medication that is not without adverse effects and it should not be tried without proper medical advice.

Should I exercise outdoors during the haze period?

Exercising outdoors when the PSI is in the unhealthy range (ie. 100 or more) is counter-productive in my opinion. The higher the PSI, the more harmful it is to inhale the polluted air when exercising. Note that when you are exercising, you have to breathe harder and the air exchange that takes place in the lungs is several times more than when you are at rest. Therefore, you are inhaling several times more of the air pollution. Breathing more pollutants into the lungs is in a way negating the beneficial effects of exercise. The most harmful pollutants – the PM2.5 particles can be taken very deep into the lungs and it is difficult for the respiratory system to expel or break down these pollutants. In addition, particles of

PM1 are known to bypass the lungs and travel straight into the blood circulation where they can be carried to other organs (such as the brain) with harmful effects.

How long can a healthy person tolerate the haze without harm?

Every individual is different in size, age and health so it is not possible to say how long a person can tolerate the haze. When the haze level is in the unhealthy range (PSI higher than 100), it is prudent for everyone to avoid outdoor activities.

Can the haze do long-term harm to our health?

Usually the harmful effects of a few minutes of haze exposure are temporary and do not lead to long-term health issues.

However, in studies performed in the US and Europe, there was found to be a definite relationship between air pollution and cardiovascular and lung cancer death. The smaller PM2.5 were particularly deadly, with 36% increase in lung cancer rate for every increase of 10 micrograms of PM2.5 per cubic metre.

Clearly then – clean air, just like good health, is invaluable. I think that it's best to avoid air pollution especially when the PSI is very unhealthy. In short, there is no 'safe' level of air pollution. The lower the better for your long-term health.

Source: Health plus
<https://www.mountelizabeth.com.sg/healthplus/article/the-effects-of-haze-on-your-health>

