

# **HAZE CRISIS - *The Malaysian Experience***

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## **INTRODUCTION**

In 1997 the haze over Malaysia was caused by forest fires in Kalimantan, some accidental but many deliberately set. The haze hung over the region for some weeks. The conditions worsen because the south and south-east winds were transporting particulate matter from the forest fires in south Kalimantan and Sumatra to Malaysia.

Two years later, in the new millennium the local paper recently reported that two Malaysian firms among 10 companies suspected to be responsible for the open burning in Riau and Kalimantan, Indonesia. Are we really serious in our environmental issues? The Chinese phrase for “crisis” incorporates the character for both “danger” and “opportunity”. The threat in Malaysia was more an opportunity to learn rather than the real danger itself. The enormous task to evacuate 2 million people in the Klang valley was a mere hypothetical political issue to get into the limelight.

## **CONCERNS**

At the height of the so haze crisis, the public was reminded to share the responsibilities of fighting the haze and not to expect the government to do everything for them. The experts highlighted the danger of suspended particulate, which are less than 10 micrometers in size have the greatest impact on health because of its capacity to be inhaled.

The suspended particulate matter is a mixture of solid particles and aerosols. These particles impair respiratory functions especially in individuals with chronic respiratory problems. The worsening haze had triggered off underlying factors in many people who were previously not diagnosed as suffering from asthma. The haze itself does cause asthma but it is certainly a trigger factor.

The government has been urged to look into the quality of haze prevention masks sold in the market. Some irresponsible people taking advantage of the current situation by increasing the price and selling ineffective protection mask in the Klang Valley. As the haze situation worsens, the demand for surgical masks exceeded supply. Retailers created artificial shortage and mark up prices of health care products, which included items such as ionisers, purifiers, air-conditioned units and eyecare solutions.

The best method to prevent attacks would be for the sufferers to stay indoors during the haze. Air quality expert claimed that the only way to keep from breathing in the haze is to remain in a sealed, air-conditioned area while using ioniser or purifiers ranging in price from RM2000 to RM10, 000. However, ionisers and purifiers were not able to reduce the

amount of gases in the air. It is not effective to ask people to stay indoors as a means to protect them if their windows are open and houses are not air-conditioned.

Parents who were especially worried that the haze would affect the health of their children, many of who were prone to respiratory illnesses have sent their children to their kampongs, most nurseries and kindergartens record a drop in attendance. Many of the children are suffering from cough and throat irritation.

More employees are taking a break from work to escape the haze... a lot of leave applications from staff at the workplace. Many city traffic policemen are suffering from eye irritation, headache, fever and respiratory problems owing to the haze. They were supplied with face masks and sunglasses to alleviate their health problem.

The haze was so bad that visibility in the district was down to 100 meters. Cars without their headlights during the day could not be seen. The public is advised to switch on the headlights, reduce speed and avoid winding down vehicle windows when driving

## CONSEQUENCES

### BUSINESS

Businesses everywhere have been affected by the haze in the Klang Valley, Menara Kuala Lumpur and the Twin Towers has not been spared either. The tower recorded 80% drop in ticket sales and all visitors are warned before they purchase the tickets at the counters that visibility was less than 1 km. Hawkers in Kuala Lumpur are experiencing a 30% drop in business because of the haze.

The Sarawak timber industry reported to have incurred estimated RM16mil loss per day since the stop work order on 19 September 1997 when the Air Pollutant Index hit the 500 mark. Losses from other sectors such as manufacturing and construction was yet to be determine but the representatives from the industrial sectors had asked for certain relief like tax cuts as compensation for losses.

An order had been issued to all airports in the country without instrument landing system (ILS) to be closed if visibility drops below 400 feet. Airport with the ILS can remain open until visibility dips below 300 feet. The haze had actually forced the closure of Sarawak Airport on 25 September 1997 when the Air Pollutant Index hit its peak of 839. The Malaysian Airlines had incurred losses due to cancellation of flights, abortive landings and delay flights during the hazy conditions.

### ACCIDENTS

The Meteorological Service Department issued warnings to ships without navigation aids not to sail in the Straits of Malacca because visibility had dropped to 0.5km

On September 19, 1997 two cargo ships collided in the straits of Malacca about 20 nautical miles from Pintu Gedung, Port Klang. The mv Sun Win was enroute to Africa from Singapore while mv Kamogawa was heading for Singapore.

Two cargo ships, Panama-registered mv Zhong Fa collided with mv Jutra Malee at 9.30 am on Friday, Sep 1997 off Tanjung Sebubal near Sarikei Sarawak as the first incident in the hazy condition.

Twenty-nine people were drowned at the site of the collision between mv Vikraman and mv Mount 1 on September 26, 1997 at the Straits of Malacca. Visibility was about 500m for most part of the day. On 28 September 1997, a Malaysian oil tanker mt Rohasria was grazed by a passing vessel.

The Airbus A300 plane owned by flag carrier Garuda plunged into a ravine after it hit trees through thick smoke haze caused by hundreds in hazy forest fires on the island of Sumatra. All 234 passengers were killed in the crash on Friday September 26, 1997. The ill-fated flight from Jakarta to Medan crashed four minutes before it was scheduled to land at the city airport.

#### ILLEGAL IMMIGRANTS

Illegal immigrants took advantage of the haze to enter the country via the coastal areas of Selangor. The number of arrest had substantiated this by the marine police at the various coastal locations.

#### CONFLICTING DATA

There was a genuine concern on the report on Air Pollutant Index reading release by Department of Environment to visibility and particulate readings by Meteorological Service Department. The government appointed Alam Sekitar Malaysia Sdn Bhd (Asma) to compile air quality data and the latest Air Pollutant Index (API) will be made available to the general public. Callers for this phone-in service will be charged RM1.95 per minute as a form of community service.

The Department of Environment (DOE) releases hourly report to the public and the worsening of the haze. The reports through the radio and TV stations help people to take adequate precautions

#### MYTHS AND FACTS

Klang Valley faces the possibility of high acid level in rain because of the haze situation and pollution from factories and vehicles. Acid rain would cause discomfort to people, affects crops, animals, soil and the chemistry in lakes and rivers. However, acidity would stabilize after continuous rainfall.

Miracle may be the only solution to haze and the peat fires especially burning around coal reserves were the toughest put and have been known to go on burning for years, according to French and Canadian experts from the airborne firefighting units.

“Divine intervention may be the only way the raging forest fires in Sumatra and Kalimantan will be doused,” said French expert Lt-Col Charlie Bastarolli.

The fluctuating in fish prices may or may not be related to haze conditions but the long-term effects of haze may eventually alter the eco-system of the marine life. Malaysia has successfully increased its fish production through aquaculture and deep-sea fishing projects.

Concerned pet owners were taking precautions to ensure his pedigree dogs’ health not by keeping them indoors, exercise in air-conditioned rooms and masks too. Another pet owner bought several mask after two of his eight monkeys became sick because of the haze.

The blood banks in Sarawak was running low in supplies, as there was a sharp drop in the number of donors due to the haze.

A local engineer invented a RM700 machine called Bungsu Buah Haze buster which use three sprinklers, a pump, plastic pipes, wire mesh and a water tank installed in his 86 old mother healthy during the hazy conditions.

## GOVERNMENT ANTI-HAZE PLAN

### NATIONAL HAZE COMMITTEE

The National Haze Committee, which was set up in 1991, will undergo an immediate expansion to include the relevant ministry to ensure increase effectiveness in implementing the national anti-haze plan. The disaster relief committee will see to it that measures adopted when API hits 250. If the API hits 300, the committee will take over the task of handling haze situation from Department of Environment (DOE).

The Prime Minister will declare a state of emergency when the index touches 500.

The Cabinet approved a national action plan to combat the haze with stringent measures that will come into force once the Air Pollutant Index (API) hits the 250 mark. The plan includes

1. Vehicles with registration numbers that end with either odd or even numbers would be banned from road while public car parks would immediately be closed in the affected areas or zones.
2. All extra-curricular activities in schools would also cease while factories in the zones will have to reduce operational hours to cut down on smoke emissions. If necessary the factories are to temporarily cease operations.

3. The public and private sector workers with health problems should leave the affected zones once the index hit 250. Employees with plenty of annual leave and are suffering from asthma or other respiratory problems should take a holiday for a safer area with their families.

4. Schools would be closed when the index reaches 400.

#### ADDITIONAL MEASURES

1. Smokers should stop smoking when the index reaches 101 and those with respiratory problems should be ready to move to safer areas
2. Car-pooling are encourage with incentives such as special lanes for those who carpooled.
3. Increase parking charges and reducing public transport fares
4. Motorcyclist should use nasal mask whenever they go outdoors.
5. Reduce outdoor sporting activities and stay indoors whenever possible.
6. The public should drink lots of water everyday and wash their hands and faces and bathe regularly.

#### EXCESSIVE SMOKE EMISSION

Curb on excessive emission by stepping up enforcement on smoke-emitting vehicles and open burning activities. Owners of vehicles emitting 50 - 70 Hartridge Smoke Units (HSUs) faced a maximum fine of RM1250 while drivers could be fined up to RM500. Those HSU reading above 75 will be fined and be barred until the vehicles are repaired.

Quarries that emit excessive does must stop operations. All earthworks and transportation of earth are to be temporarily stopped. . Quarry operators are required to hire external consultants approved by DOE to check on their activities once every three months.

#### ENFORCEMENT OF OPEN BURNING

Local authorities should step up their enforcement operations on open burning activities especially at construction sites. Local authorities were urged to fence up dumpsites to prevent the public, especially scavengers, from carrying out open burning. Those found to be encroaching into the dumpsites will be charged for trespassing. More checks would be conducted at night as many factories have resorted to emitting smoke under cover of darkness. Under the Environment Quality (Amended) Act 1996, offenders may be fined up to RM100000 or jailed five years or both.

## WATER CURTAIN

The proposed installation of water sprinkler systems on high-rise buildings had been viewed as positive steps taken by the Malaysian Government. The system, also known as water curtain, uses wet riser pipelines in building exceeding 10 storeys. The system uses 22,500 to 45000 gallons of water a day. Apart from that all sections of the community, including the public, traders, construction sectors and local authorities must take steps to sprinkle construction sites, roads and other areas to reduce dust

## CLOUD SEEDING PROGRAM

The cloud-seeding activities, which were confined to the Klang Valley, would be carried out aggressively throughout the country. Cloud seeding is a weather modification method to induce internal changes in the cloud so that droplets became heavier and drop.

PM has called for the study on using ground-based rocket launchers to conduct cloud seeding as one of the means to combat the persistent haze. It will provide an alternative method to flying up into the clouds to conduct this rain inducing exercise. Not many pilots want to fly into clouds.

Meteorological Service Department viewed - rockets were not suitable for warm weather clouds. Rockets are usually effective in breaking up cold clouds, which are made of hard icy crystals, for rainmaking. The rocket launcher will be used to fire water, diluted salt solution or urea into moisture filled clouds to expedite the formation of rain. Twin-engine Skyvan fitted with cloud seeding equipment would go up in search of the atmospheric conditions like cumulus and cauliflower clouds for the rain operation.

## FOREST FIRE DETECTION SYSTEM

Ministry had been directed to study the use of space imaging to prevent and monitor forest fires using satellites and to provide regional image of the haze. The country's Remote Sensing Center would allow ground-receiving station to access these satellite images.

## ECO-FRIENDLY FUELS

DOE Study conducted in 1992 on air quality management in Klang Valley concluded that air quality would worsen by 2005 if steps were not taken to ease traffic congestion and compel industries to switch eco-friendly fuels. Among other measures proposed in the plan are getting industries to switch to natural gas, siting new factories in non-congested and non-residential areas, mandatory installation of catalytic converters, and compelling both diesel or petrol motor vehicle manufacturers to meet DOE emission standards.

## ZERO BURNING TECHNOLOGY

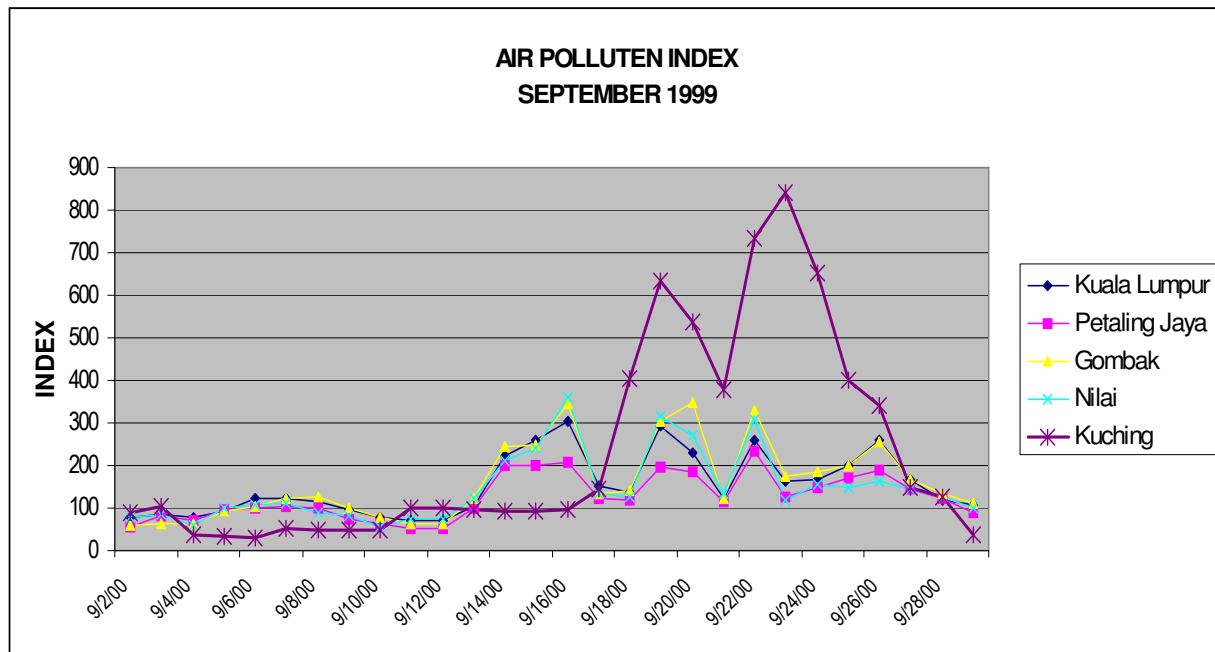
All companies should have the capacity to practice zero burning techniques and there should aim to further strengthening and enhancing environmental cooperation between Malaysia and Indonesia.

### CRISIS PLAN IN THE PRIVATE SECTORS

The need to have a crisis plan for the private sectors was equally important. It is crucial to remember that what happens to a nation affects what happen in the business sectors.

It was interesting to note that this was a new experience for many people in Malaysia particularly in the business community. For the 1997 the haze crisis, every known crisis management leader or coordinator was actually monitoring the events of the day. It was virtually a new scenario and an unfamiliar crisis so to speak. Every available data was necessary to help in develop the crisis plan. The most crucial question was to visualize the need for total evacuation when escalated into the national crisis level and who should be around to protect the property of the facility. For those companies in the Klang Valley was fortunate for not being in the most haze-impacted area.

I chose to work on the worst possible scenario i.e. the need for total evacuation as the ultimate challenge and gradually developing a plan using the Air Pollutan Index as the metrics. The tabulated as Figure 1 below:



<b>HAZE CRISIS ALERT PLAN</b>				
<b>Emergency Level</b>	<b>API Rating Status</b>	<b>National Level</b>	<b>Impact</b>	<b>Action</b>
Level 1	000-200	Green	Pre-Alert	<ul style="list-style-type: none"> <li>▪ Normal</li> <li>▪ Updating Data Base</li> <li>▪ Equipment Checks</li> <li>▪ Respiratory Problems</li> <li>▪ Transportation</li> <li>▪ Activate CRT</li> <li>▪ Relief Committee.</li> </ul>
Level 2	200-500	Yellow	250— Disaster & Alert Mode	
Level 3	500-800	Red Alert	400- School Close	
Level 4	800-1000	Emergency Localized (State)	500- Emergency Declared	
Level 5	1000 & Above	National Crisis		

## VIOLATIONS

Two transport companies were fined RM10000 and RM2000 respectively by the session court for excessive smoke emission. They were found guilty of committing the offence under section 22(1) of the Environment Quality Act. A couple of others are not included here.

## CONCLUSION

This article was written with the intention to review the lessons learned in the aftermath. Obviously, the fact remained that natural disaster would be resolved by nature itself was proven right when heavy shower actually removed the haze crisis in Malaysia. Divine intervention invariably needed for in many crisis situations.