



**DEPARTMENT OF OCCUPATIONAL SAFETY AND HEALTH MALAYSIA**

**GUIDELINES FOR THE PROTECTION OF EMPLOYEES AGAINST THE EFFECTS  
OF HAZE AT WORKPLACES**

**Introduction**

The main pollutant of concern to health during a smoke haze is the fine particulate matter or PM<sub>10</sub> (particulate of size 10 micron and below). The health effect depends on the severity of the smoke haze as described by the API (Air Pollutant Index) value. At API > 100, the air quality is deemed unhealthy.

2 Under the Occupational Safety & Health Act, 1994 (OSHA), employers have a duty to protect their employees' safety and health at work. When API value exceeds 100, employees will be exposed to higher levels of safety and health risk due to poor visibility and/or ill effects of haze. Hence, it is duty upon employers to carry out a proper risk assessment and to implement appropriate measures, including specifying when to stop work, so as to ensure that risks identified are minimised or mitigated. In situations where haze poses immediate danger to the safety and health of workers and measures have not been taken to mitigate those risks, the Department of Occupational Safety and Health (DOSH) may order the affected work to stop. If any person fails to comply with a stop work order, under the OSHA he shall be liable on conviction to a fine not exceeding RM 50,000.00 or to imprisonment for a term not exceeding 5 years or to both, and to a further fine of RM 500.00 for each day during which the offence continues.

3 The objective of these guidelines is to help both employers and employees to be better prepared in minimising or mitigating the effects of haze. The API values stated in these guidelines refer to the 24-hour running average of the main pollutant of concern,

PM10 included in Malaysian Air Quality Guidelines issued by the Department of Environment (DOE).

## **Preparation**

4 Following announcement of an increased risk of haze by relevant government agency, employers should initiate the following preparations to protect the safety and health of employees against the effects of haze:

- a) Identify susceptible employees (Employees with heart or respiratory illness);
- b) To identify employees with medical symptoms related to haze and ask them to seek medical treatment
  - e.g. - Throat itchiness and coughing;
  - Irritated and watery eyes;
  - Running nose and sneezing; and
  - Itchy skin;
  - Difficulty in breathing and/or breathlessness
- b) Identify types of outdoor work (Work that is carried out outside buildings regularly or most of the time) to be reduced when there is haze;
- c) Determine criteria for stopping outdoor work;
- d) Conduct respirator fit testing for employees who need to work outdoors;
- e) Ensure sufficient stock of disposable N95 respirators;
- f) Improve efficiency of air cleaning devices for workplace and equipment; and
- g) Implement haze communication system between employer and employees.

## **Management of susceptible employees**

5 Employees with existing heart or respiratory illness are more susceptible to the effects of haze. When API value exceed 100, these susceptible employees must use respiratory protective devices (or respirators) if working outdoors. If they experience breathing difficulty from wearing respirators while working outdoors, employers should deploy them to work indoor where the pollutant concentration is lower. When API value exceed 200, all susceptible employees should be deployed to work indoor, preferably in work that is not physically strenuous.

## **Minimising outdoor work**

6 At API > 100, outdoor work involving strenuous activity should be minimised. Any employee who has difficulty using respirators while working outdoors should be deployed to work indoor.

7 At API > 200, outdoor work involving strenuous activity should be avoided.

8 At API >300, risk assessments should be conducted to determine whether outdoor lifting operations involving tower and mobile cranes should cease due to the foreseeable risk of poor visibility, so as not to compromise safety of persons at work. Such work can only be carried out when appropriate precautions have been taken to reduce the risk. Employers are reminded of their duties under Section 15 the OSHA to provide and maintain for their employees a work environment which is safe, without risk to health, and adequate as regards facilities and arrangements for their welfare at work. Employer fails to comply with Section 15 OSHA on conviction, be liable to a fine not exceeding RM 50,000 or to imprisonment for a term not exceeding 2 years or to both.

9 At API > 400, there will be an increased risk of ill health for all persons, including employees conducting non-strenuous outdoor work. Hence, the risk assessment will

need to include the impact of haze on the health of all employees, especially those working outdoors. If the risk of ill health cannot be mitigated, the work activity should stop. For those engaged in emergency and essential services, the risk should be mitigated by wearing suitable respirators.

### **Provision of suitable respirators**

10 It is the duty of employers to provide suitable respirators to employees when required (please refer to Table 1). The correct type of respirator is one which is capable of filtering out about 95% of very fine particles. Disposable N95 respirators, commonly called N95 masks, are preferable as they are more comfortable than cartridge respirators.

11 Employees who are required to wear respirators should be fit-tested to ensure good fit of the respirator. Employers should ensure sufficient stock of respirators for these employees. Training and supervision should be conducted to ensure correct usage of respirators. Respirators should be changed when soiled/physically damaged or when the wearer finds it hard to breathe.

### **Enhancing protection for indoor work and certain equipment**

12 Air quality for both non air-conditioned and air-conditioned workplaces can be improved with the use of suitable air cleaning devices.

13 To enhance the protection offered by remaining indoors, measures should be taken to reduce haze infiltrating indoor air by keeping windows and doors closed most of the time.

14. For workplace having equipment with Air Processing Unit (APU), adequate measures should be taken to ensure filtration system use be able to prevent entry of excessive suspended solid particles into the system.

### **Communication on haze**

15. A system should be put in place to update employees regularly on the mitigating measures taken by the organisation to minimise the safety and health effects of haze on employees. The system should include channels for employees to report adverse effects suffered as a result of the haze.

16. For queries on these guidelines, please contact the Industrial Hygiene Division, Chemical Management Division or Occupational Health Division of Department of Occupational Safety and Health Malaysia.

**TABLE 1: GUIDELINES FOR THE PROTECTION OF EMPLOYEES  
AGAINST THE EFFECTS OF HAZE AT WORKPLACES**

24-Hour Air Pollutant Index (API) Value	General Health Effects	Measures to be taken by Employer	Measures to be taken by Employees
51– 100 (Moderate)	Few or has no ill effects on general population	<ul style="list-style-type: none"> <li>• Identify susceptible employees</li> <li>• Identify types of outdoor work to be reduced when there is haze</li> <li>• Determine criteria for stopping outdoor work</li> <li>• Ensure sufficient stock of disposable N95 respirators</li> <li>• Improve efficiency of air cleaning devices for enhanced protection of indoor workers</li> <li>• Implement haze communication system between employer and employees</li> <li>• Communicate to employees on measures taken to protect their safety and health during haze</li> </ul>	<ul style="list-style-type: none"> <li>• All employees carrying out outdoor work to undergo respirator fit testing</li> <li>• All employees know when to stop outdoor work</li> </ul>
101-200 (Unhealthy)	Mild aggravation of symptoms among susceptible persons i.e. those with heart and lung disease, with irritation symptoms in the healthy population	<ul style="list-style-type: none"> <li>• Outdoor work which involves strenuous physical activity should be minimised.</li> <li>• Provide suitable respirators to susceptible employees working outdoors</li> <li>• If susceptible employees have difficulty working outdoors, employers should deploy them to work indoor</li> <li>• Advice workers on health measures</li> <li>• All construction sites to be sprayed with water regularly</li> </ul>	<ul style="list-style-type: none"> <li>• Susceptible employees must use suitable respirators if working outdoor</li> <li>• Advice drink water regularly</li> <li>• Advice to use public transport</li> </ul>
201-300 (Very Unhealthy)	Significant aggravation of symptoms and decreased tolerance in persons with heart or respiratory illness; widespread symptoms in healthy population	<ul style="list-style-type: none"> <li>• Outdoor work which involves strenuous physical activity should be avoided.</li> <li>• Susceptible employees should be deployed to work indoor, preferably doing work which is not physically strenuous</li> <li>• Provide suitable respirators to all employees carrying out outdoor work Earthworks and earth</li> </ul>	<ul style="list-style-type: none"> <li>• All employees carrying out outdoor work should use suitable respirators</li> <li>• Susceptible employees should work indoor, preferably doing work which is not physically</li> </ul>

		<p>movements to be stopped temporarily</p>	<p>strenuous.</p> <ul style="list-style-type: none"> <li>• Advice drink water regularly</li> <li>• Advice to use public transport</li> </ul>
<p>301-400 (Hazardous)</p>	<p>Early onset of certain diseases in addition to significant aggravation of symptoms and decreased exercise tolerance in healthy persons</p>	<ul style="list-style-type: none"> <li>• Outdoor work which involves strenuous physical activity should be avoided</li> <li>• Must provide suitable respirators to all employees carrying out outdoor work</li> <li>• Risk assessment* should consider the additional risk posed by poor visibility for work activities such as lifting operations.</li> <li>• All vehicles are advice to switch on head lights for better vision while driving.</li> </ul>	<ul style="list-style-type: none"> <li>• All employees carrying out outdoor work should wear suitable respirators</li> <li>• Susceptible employees should remain indoors and avoid strenuous work</li> <li>• Advice drink water regularly</li> <li>• Advice to use public transport</li> </ul>
<p>&gt;400 (Very Hazardous)</p>	<p>May be life threatening to ill and elderly persons. Healthy people experience adverse symptoms that affect normal activity.</p>	<ul style="list-style-type: none"> <li>• Outdoor work should be avoided.</li> <li>• Risk assessment* should consider the impact of haze on the health of all employees, especially those working outdoors. For those engaged in emergency and essential services, the risk should be mitigated by wearing suitable respirators.</li> <li>• Awaiting National Committee on Disaster Management on further instruction.</li> </ul>	<ul style="list-style-type: none"> <li>• All employees should remain indoors and avoid Strenuous work.</li> <li>• All employees carrying out emergency and essential services must wear suitable Respirators</li> <li>• Advice drink water regularly</li> <li>• Advice to use public transport</li> </ul>

**\*Risk Assessment:**

During haze, employees will be exposed to higher levels of occupational safety and health (OSH) risk due to poor visibility and/or ill effects of haze. Employer should conduct a proper risk assessment and implement appropriate measures, including specifying when to stop work, so as to ensure that risks identified and minimised or mitigated. If the OSH risk cannot to be mitigated, such activities should stop. The work should only resume when precautions have been taken to reduce this risk. In conducting of risk assessment the employer can make reference to Guidelines on Hazard Identification Risk Assessment and Risk Control (HIRARC) published by the Department of Occupational Safety and Health (DOSH) Malaysia.