

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

[UPDATED 5 JULY 2013]

Introduction

1 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 main pollutant of concern to health during a smoke haze is particulate matter of size 10 microns or less in diameter (PM10). The health effect depends on the severity of the smoke haze as benchmarked against the PSI (Pollutant Standards Index) reading. The PSI levels stated in these guidelines refer to the latest available 24-hour PSI issued by the National Environment Agency (NEA), which is available online at www.nea.gov.sg/psi. During haze periods, NEA and Ministry of Health (MOH) will release health advisories to the public based on air quality levels. Employers are encouraged to refer to these advisories to assist them in their planning.

2 Under the Workplace Safety & Health (WSH) Act, employers have a duty to protect their employees' safety and health at work. When the health advisory level follows a 24-hour PSI exceeding 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 incumbent upon employers to carry out a proper risk assessment and to implement appropriate measures, including specifying when to restrict work, so as to ensure that risks identified are minimised or mitigated. In situations where haze poses imminent danger to the safety and health of workers and measures have not been taken to mitigate those risks, the Ministry of Manpower (MOM) may order the affected work to stop. If any person (individual or corporate bodies) fails to comply with a stop work order, under the WSH Act he shall be liable on conviction to a fine not exceeding \$500,000 or to imprisonment for a term not exceeding 12 months or to both.

Preparation

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

- a) Identify susceptible employees¹
- b) Identify types of outdoor work² to be reduced when there is haze
- c) Determine criteria for restricting outdoor work
- d) Conduct respirator fit testing for employees who need to work outdoors
- e) Ensure sufficient stock of suitable respirators
- f) Improve efficiency of air cleaning devices
- g) Implement haze communication system between employer and employees.

Management of susceptible employees

4 Elderly or pregnant employees are more susceptible to the effects of haze. When the health advisory level follows a 24-hour PSI exceeding 100, these susceptible employees are to minimise prolonged outdoor work. When the health advisory level follows a 24-hour PSI exceeding 200, these

¹ This refers to employees with chronic lung disease, heart disease, or stroke; and elderly or pregnant employees.

² Outdoor work is work that is carried out outside buildings regularly or most of the time.

employees should avoid all outdoor work. If outdoor work is unavoidable, they must use a suitable respirator.

5 Employees with chronic lung disease, heart disease, or stroke are also more susceptible to the effects of haze. When the health advisory level follows a 24-hour PSI exceeding 100, these susceptible employees should avoid all outdoor work. When the health advisory level follows a 24-hour PSI exceeding 200, these employees should be deployed indoors, preferably doing work which is not physically strenuous. If outdoor work is unavoidable, they must use a suitable respirator.

6 At any time if any of the susceptible employees experience breathing difficulty from wearing respirators while working outdoors, employers should deploy them to work indoor where the pollutant concentration is lower.

Management of outdoor work (Healthy Persons)

7 When the health advisory level follows a 24-hour PSI exceeding 100, outdoor work involving prolonged³ or strenuous⁴ activity should be minimised.

8 When the health advisory level follows a 24-hour PSI exceeding 200, outdoor work involving prolonged or strenuous activity should be avoided. If prolonged and strenuous work is unavoidable, a suitable respirator should be used.

9 When the health advisory level follows a 24-hour PSI exceeding 300, all outdoor work should be minimised. If unavoidable, a suitable respirator should be used. Risk assessments should also 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 the WSH Act 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. In addition to the WSH Act, failure to implement effective risk management to eliminate or minimise WSH risks is also an offence under the WSH (Risk Management) Regulations. The penalty for the first offence is a maximum fine of \$10,000. For a second or subsequent offence, the penalty is a fine of up to \$20,000 or imprisonment for a term not exceeding 6 months or to both.

Provision of suitable respirators

10 It is the duty of employers to provide suitable respirators to employees when required (please refer to Table A). The correct type of respirator is one which is capable of filtering out about 95% of very fine particles, such as N95 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

12 Please refer to NEA's website (<http://app2.nea.gov.sg/anti-pollution-radiation-protection/air-pollution/haze/air-cleaning-devices>) for

³ Prolonged = continuous exposure for several hours.

⁴ Strenuous = involving a lot of energy or effort.

information on how you can improve the air quality for both non air-conditioned and air-conditioned workplaces 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.

Communication on haze

14 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.

15 For queries on these guidelines, please contact the Ministry of Manpower.

MOM Contact Centre, Tel: (65) 6438 5122

Online Enquiry via this [link](#)

Website: www.mom.gov.sg

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

24-Hour PSI Reading	Measures to be taken by employers
51– 100 (moderate)	<ul style="list-style-type: none"> • Identify susceptible employees • Identify types of outdoor work to be reduced when there is haze • Determine criteria for restricting outdoor work • Ensure sufficient stock of suitable respirators • Improve efficiency of air cleaning devices for enhanced protection of indoor workers • Implement haze communication system between employer and employees. • Communicate to employees on measures taken to protect their safety and health during haze
101-200 (unhealthy)	<ul style="list-style-type: none"> • Minimise prolonged or strenuous outdoor work for healthy employees. • Minimise prolonged outdoor work for elderly or pregnant employees. • Avoid all outdoor work for employees with chronic lung disease, heart disease, or stroke. If outdoor work is unavoidable, they should be provided with suitable respirators⁵.
201-300 (very unhealthy)	<ul style="list-style-type: none"> • Avoid prolonged or strenuous outdoor work for healthy employees. If prolonged and strenuous outdoor work is unavoidable, they should be provided with suitable respirators. • Avoid all outdoor work for elderly or pregnant employees. If prolonged outdoor work is unavoidable, they should be provided with suitable respirators⁵. • Avoid all outdoor work for employees with chronic lung disease, heart disease, or stroke. If outdoor work is unavoidable, they should be provided with suitable respirators⁵.
> 300 (hazardous)	<ul style="list-style-type: none"> • Minimise all outdoor work for healthy employees. If outdoor work is unavoidable, they should be provided with suitable respirators. • Avoid all outdoor work for elderly or pregnant employees. If outdoor work is unavoidable, they should be provided with suitable respirators⁵. • Avoid all outdoor work for employees with chronic lung disease, heart disease, or stroke. If outdoor work is unavoidable, they should be provided with suitable respirators⁵. • Risk assessment⁶ should consider the additional risk posed by poor visibility for work activities such as lifting operations involving tower and mobile cranes.

⁵ The use of suitable respirators, such as N95 mask, may increase the effort in breathing and may cause discomfort, tiredness or headache. For most people this is not serious.

However, as some elderly people, people with chronic lung disease, heart disease or stroke, and women in the 2nd and 3rd trimesters of pregnancy may already have reduced lung volumes or breathing issues, they should stop using a N95 mask if they feel uncomfortable. They should consult their doctor as to whether they can use the N95 mask.

Women in the 2nd and 3rd trimesters of pregnancy should not use the N95 mask for more than a short duration each time.

⁶ During haze, employees will be exposed to higher levels of WSH risk due to poor visibility and/or ill effects of haze. Employers should conduct a proper risk assessment and implement appropriate measures, including specifying when to restrict work, so as to ensure that risks identified are minimised or mitigated. If the WSH risk cannot be mitigated, such activities should be restricted. The work should only resume when precautions have been taken to reduce this risk.