

Risk Assessment for the Prevention of Heat Stroke at Work



Occupational Safety and Health Branch
Labour Department



This booklet is prepared by
the Occupational Safety and Health Branch
Labour Department

This edition March 2009

This booklet is issued free of charge and can be obtained from offices of the Occupational Safety and Health Branch of the Labour Department. It can also be downloaded from website of the Labour Department at http://www.labour.gov.hk/eng/public/content2_9.htm. For enquiries about the addresses and telephone numbers of the offices, please visit the website of the Department at <http://www.labour.gov.hk/eng/tele/osh.htm> or call 2559 2297.

This booklet may be freely reproduced except for advertising, endorsement or commercial purposes. Please acknowledge the source as "Risk Assessment for the Prevention of Heat Stroke at Work", published by the Labour Department.

Risk Assessment for the Prevention of Heat Stroke at Work

Contents

Introduction	3
How to Use the Checklist	4
Heat Stress Assessment Checklist	5
Heat Stress Assessment Checklist (Example for Reference)	10
Other Publications	13
Enquiries	13
Complaints	13

Risk Assessment for the Prevention of Heat Stroke at Work

Introduction

Workers engaged in manual work are at risk of suffering heat stroke in a hot indoor or outdoor environment, especially in the summer days when the temperature and humidity are high. To prevent heat stroke, employers should arrange for a suitable assessment of the risk of heat stress at the workplace and, based on the assessment results, take out effective preventive measures. In most cases, such risk assessments are simple and can be conducted with the help of a checklist. This booklet provides a sample checklist for reference.

Employers may appoint a person who is familiar with the working conditions of the workplace and has basic occupational safety and health knowledge about heat stress to conduct a risk assessment with the checklist.

How to Use the Checklist

- Complete Section I on workplace information. Give a brief description of the work process.
- Section II gives a list of questions covering seven risk factors, namely, temperature, humidity, heat radiation, air movement, workload, clothing and acclimatization. Go through the questions carefully and tick the answer in the box as appropriate.

A "Yes" answer for any question indicates that there may be potential risk of heat stress. The more questions having a "Yes" answer, the higher is the potential risk.

- Summarise the results of the assessment and recommend suitable control measures and their implementation time, as appropriate, in Section III. In drawing up specific control measures for any risk factors identified, you may make reference to the examples given in the corresponding part of Section II.
- For reader's reference, this booklet also gives an example of a completed checklist for a selected outdoor work activity.
- Where there is doubt about whether the recommended measures can effectively control the risk, e.g. some measures or similar measures are already in place, workers have to wear personal protective equipment (such as respirators and non-breathing protective clothing) at work etc, you should consider the need for engaging a person with knowledge, experience and competence in heat stress risk assessment (including the use of suitable equipment to measure heat stress parameters and interpret the results) to conduct a detailed and comprehensive risk assessment.

Heat Stress Assessment Checklist

Section I

Name of organization / Department: _____

Work location: _____

No. of workers and work description: _____

Section II

	Risk factor	Yes	No	Examples of specific control measures for risk factor
1	Temperature			
	Is the workplace located outdoor?	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Take heed of weather report. When the "Very Hot Weather Warning" is in force, enhance control measures, e.g. where practicable, reschedule the work to cooler periods in the daytime (e.g. before 10:00 am or after 4:00 pm) and arrange the work at a cooler place; arrange more frequent rest breaks (e.g. appropriate break after 20-40 minutes of work); provide sheltered resting areas near the work location; provide workers with drinking water and remind them to take plenty of water and stay alert of their physical conditions, etc. - Eliminate or relocate the sources of hot air. - Exhaust hot air out of the workplace. - Provide air conditioning to the workplace.
	Is the workplace directly affected by the temperature of the outdoor environment? (e.g. workplace ventilated by opening windows)	<input type="checkbox"/>	<input type="checkbox"/>	
	Does the temperature of the workplace generally exceed 32°C?	<input type="checkbox"/>	<input type="checkbox"/>	
	Does the air in the workplace feel hot?	<input type="checkbox"/>	<input type="checkbox"/>	

2 Humidity				
Is the workplace directly affected by the humidity of the outdoor environment?	<input type="checkbox"/>	<input type="checkbox"/>	-	Take heed of weather report. When the weather is humid, enhance control measures as mentioned above.
Does the relative humidity of the workplace generally exceed 85% ?	<input type="checkbox"/>	<input type="checkbox"/>	-	Remove steam or moisture by exhausting it out of the workplace, particularly workplaces in a confined area.
Is there any source/ equipment that produces steam?	<input type="checkbox"/>	<input type="checkbox"/>	-	Increase air flow with appropriate ventilation system, e.g. air-conditioning and/or portable fans.
Is the skin of the workers completely wet?	<input type="checkbox"/>	<input type="checkbox"/>	-	Wear thin and vapour permeable clothing.
3 Heat Radiation				
Do the workers work under direct sunlight?	<input type="checkbox"/>	<input type="checkbox"/>	-	<ul style="list-style-type: none"> - Set up sunshade/shelter over the working positions where practicable. - Wear light-coloured, loose-fitting clothing made of natural materials, where it does not pose safety concern. - Wear light-coloured safety helmets in construction sites. In other workplaces, wear wide-brimmed hat to block away sunlight on the face and neck. - Take heed of weather report. When the UV index is at a high level, enhance sunshade facilities and reduce outdoor work as appropriate.

<p>Are there any heat sources / heat generating facilities (e.g. fire, welding, hot surfaces and machinery) in close proximity to workers?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Isolate heat generating facilities. - Use suitable materials to cover the radiant surfaces (especially black or dark-coloured surfaces) of the facilities or use facilities with non-radiant surfaces. - Set up suitable screens to reflect radiant heat away from the workers. - Provide reflective protective clothing for the workers.
<p>4 Air Movement</p>			
<p>Is the air stagnant in the workplace where the environment is hot?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Increase air flow with appropriate ventilation system, e.g. air-conditioning and/or portable fans.
<p>Is any warm or hot air blowing onto the workers?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Keep hot air draughts away from the workers.
<p>5 Workload</p>			
<p>Is the workload heavy? (e.g. carrying a heavy object over a long distance)</p>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Provide mechanical aids for workers to minimize physical demand on them.
<p>Do the workers perform intensive manual work at a fast pace?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Reorganize the work to reduce intensity and pace of bodily movement of the workers.

6 Clothing			
Do the workers wear thick or vapour impermeable clothing?	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Wear thin and vapour permeable clothing. - Reschedule tasks requiring the wearing of thick or vapour impermeable clothing to cooler periods of the day.
7 Acclimatization			
Are the workers not yet acclimatized to the hot work environment?	<input type="checkbox"/>	<input type="checkbox"/>	<ul style="list-style-type: none"> - Allow time for acclimatization starting with a lower workload or shorter working duration, and gradually increasing the workload or duration over a number of days.

Section III

a) Summary of risk assessment results:

b) Recommendations for control measures and their implementation time:

Assessor: _____ Signature: _____

Date and time of assessment: _____

(Example for Reference)

Heat Stress Assessment Checklist

Section I

Name of organization / Department:

ABC Construction Company

Work location:

123 XXX Street

No. of workers and work description:

2 workers manually excavating a trench for pipe-laying in Jun 2009

Section II

	Risk factor	Yes	No
1	Temperature		
	Is the workplace located outdoor?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Is the workplace directly affected by the temperature of the outdoor environment? (e.g. workplace ventilated by opening windows)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Does the temperature of the workplace generally exceed 32°C?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Does the air in the workplace feel hot?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Humidity		
	Is the workplace directly affected by the humidity of the outdoor environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Does the relative humidity of the workplace generally exceed 85% ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Is there any source/equipment that produces steam?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Is the skin of the workers completely wet?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3 Heat Radiation		
Do the workers work under direct sunlight?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are there any heat sources/ heat generating facilities (e.g. fire, welding, hot surfaces and machinery) in close proximity to workers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4 Air Movement		
Is the air stagnant in the workplace where the environment is hot?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is any warm or hot air blowing onto the workers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5 Workload		
Is the workload heavy? (e.g. carrying a heavy object over a long distance)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Do the workers perform intensive manual work at a fast pace?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6 Clothing		
Do the workers wear thick or vapour impermeable clothing?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7 Acclimatization		
Are the workers not yet acclimatized to the hot work environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Section III

a) Summary of risk assessment results:

There are risk factors of high temperature, high humidity, intense solar radiation and heavy workload. The risk of heat stroke is high if suitable control measures are not adopted in the workplace.

b) Recommendations for control measures and their implementation time:

I) Implement the following before work commences

- *Set up a sheltered resting area near the work location.*
- *Arrange for the provision of adequate supply of cool potable water during work at all times.*
- *Provide portable fans to enhance ventilation to the workers at the work location and resting area.*
- *Provide lighter shovels to reduce the effort of shoveling.*
- *Ensure that the workers are adequately trained on the symptoms of heat stroke, the precautionary measures and the emergency response actions.*

II) Implement the following precautions on every workday after work commences

- *Take heed of weather report. In case of "Very Hot Weather Warning", high UV index or humid weather, reschedule excavation work to periods before 10:00 am or after 4:00 pm, and arrange an appropriate break after 20-40 minutes of excavation work.*
- *Set up temporary sunshade over the working positions of the workers.*
- *Ensure that the workers wear light-coloured safety helmets and light-coloured, loose-fitting clothing made of natural materials.*
- *Arrange regular breaks for the workers.*
- *Remind workers to take plenty of water and stay alert of their physical conditions.*

Assessor: *CHAN Tai-man*

Signature: *XX*

Date and time of assessment: *26 May 2009 11:00 am*

Other Publications

Readers may refer to the leaflet, produced by the Labour Department, entitled "Prevention of Heat Stroke at Work in a Hot Environment" for general information about prevention of heat stroke at work.



Enquiries

For enquiries about this booklet on occupational health and hygiene matters, please contact the Labour Department's Occupational Safety and Health Branch through:

Telephone : 2852 4041

Fax : 2581 2049

Email : enquiry@labour.gov.hk

Information on the services offered by the Labour Department and on major labour legislation can also be found on our website at <http://www.labour.gov.hk>.

Information on the services provided by the Occupational Safety and Health Council can be obtained through its hotline 2739 9000.

Complaints

If you have any complaint about unsafe workplaces and practices, please call the Labour Department's Occupational Safety and Health complaint hotline on 2542 2172. All complaints will be treated in the strictest confidence.

