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# SAFETY AND HEALTH TOPIC SHEET NO. 14: PROTECTION AGAINST ENVIRONMENTAL CONDITIONS

*A safety and health 'topic sheet' aimed at raising awareness of hazards in the rope access industry. The series may be of use as a toolbox talk.*

## 1 INTRODUCTION

1.1 Working in any of the following environmental conditions can be hazardous:

- wind;
- wet and cold;
- hot; and
- ultra-violet radiation.

1.2 Before starting work in any of these conditions, and during the work itself, consideration should be given to what can go wrong and whether it is really necessary to do the work at that time. A suitable risk assessment for any adverse conditions anticipated; and kept under review.

| **Case Study** |
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| The roof extractors in a mill were not operational, leading to high heat temperatures. A technician started to feel faint. Rehydration was issued to all technicians working in high temperature environments. A schedule was issued, limiting the time technicians were expected to work in the heat. |

## 2 PROTECTION AGAINST WINDY CONDITIONS

2.1 Even the simplest of tasks can carry an increased level of risk when undertaken at height, e.g. changing a battery or a drill bit can result in a serious incident if they are dropped. Likewise, a relatively small injury, sprain or muscle tear can become very serious when working at height. Any number of small incidents can be increased in severity when happening at height.

2.2 Wind speeds, working height and inclement weather such as rain and cold are likely to affect working times when working at height.

2.3 Winds in excess of 37 kph; 23 mph; 20 knots; 10.3 m/s (conversions are approximate) are likely to affect a person's balance, with an increased risk of a fall from a height.

2.4 High winds can dislodge unsecured tools from working platforms and materials such as roofing, etc. with the risk of injury to people in the working area (and even to those outside of any existing exclusion zone(s) below).

2.5 Weather forecasts usually give 'mean' wind speeds. However, it is important to take into account the predicted 'gust' speeds.

2.6 If gust speeds are not known the approximate 'gust' speed, as a general guide, is twice the 'mean' speed (for all heights up to 35 m).

2.7 There is no definitive maximum wind speed at which rope access work should be stopped, as this depends on many factors, e.g. place of work; company policy; nature of the task. Your company operating procedure should state when work will be suspended and re-assessed.

2.8 As well as wind speed it is important to consider storms, lightning, the potential for vortices, etc.

2.9 Risk assessment should consider at least the following:

- effective communication;
- regular monitoring of wind speed;
- whether access and egress effected;
- whether steps to be taken to minimize or eliminate the risk;
- the well-being of the technicians.

# 3 PROTECTING AGAINST WET AND COLD CONDITIONS

3.1 Water conducts heat away from the body 25 times faster than air. Consequently, being wet can soon lead to hypothermia, especially in cool or cold conditions.

3.2 In addition to the ambient temperature, the cooling effect of the wind needs to be taken into account when protecting against the cold.

3.3 Hypothermia is a condition which occurs when the core temperature of the body drops below that required for it to function normally. An early sign of hypothermia is constant shivering. Shivering itself is actually a good sign, as it shows that a person's heat control system is still working.

3.4 Hypothermia is treated by preventing further body heat being lost and by gently rewarming the casualty. For mild hypothermia, some physical exercise by the casualty can be helpful in rewarming the body. Immediate medical attention should be sought if it is suspected that someone has more than mild hypothermia, because of its potential threat to life.

3.5 Staying warm and dry can be achieved by wearing multiple layers of clothing (known as layering) is a long-established and effective way of insulating the body from the cold. The effectiveness of layering has been enhanced over the years by the development of new materials and fabrics.

# 4 PROTECTING AGAINST HOT CONDITIONS

4.1 Rope access technicians who are exposed to hot and dry or hot and humid conditions, outdoors or indoors (e.g. near a furnace), are at risk of hyperthermia (not to be confused with hypothermia) and dehydration, with related illnesses such as heat stroke, heat exhaustion, heat cramps, heat rash.

4.2 The risk becomes greater as the temperature and humidity increase, especially for workers who have not been given time to adapt from more temperate conditions.

4.3 Both air temperature and humidity affect how hot a person feels. Humidity, which is moisture in the air, plays an important part in this feeling. Hydration is also important, as well as fatigue.

4.4 Workers become overheated in two primary ways:

- the environmental conditions; and

- body heat generated by physical activity.

4.5 The 'heat index' (see **ICOP, Annex O, O.4.2**)[1] is a single value that takes both temperature and humidity into account. It is a better measure than air temperature alone for estimating the risk to workers from environmental heat sources. The higher the heat index, the hotter the weather feels, since sweat does not readily evaporate and cool the skin.

| **Case Study** |
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| Two staff located on ground level were overcome by heat stress/dizziness and fainted as a result of extreme heat. Medical treatment was provided by the client. The staff returned to stores duties initially, before returning to normal site duties shortly thereafter. The work was rescheduled for cooler hours, with breaks. Staff were advised to consume a minimum of 6 to 8 litres of water per day (and monitored). A safety bulletin was issued and a toolbox talk undertaken on all sites. |

## 5 PROTECTING AGAINST ULTRA-VIOLET RADIATION

5.1 Whilst most rope access work is outdoors - with its consequent exposure to the effect of ultra-violet (UV) radiation from the sun - it should be noted that welders, working indoors or outdoors, can be exposed to ultra-violet radiation from the welding arcs.

5.2 Exposure to ultra-violet radiation without proper protection can be hazardous, with the risk of sunburn, damage to the eyes and several types of skin cancer.

5.3 The strength of UV radiation varies, depending on:

- the world location;
- the time of year; and
- on a number of different weather factors.

5.4 Sunlight and, therefore, UV radiation is at its strongest during the summer and between 10:00 h and 16:00 h. However, there is UV radiation even on cloudy days.

5.5 The symptoms of sunburn should be considered.

5.6 The 'Sun Protection Factor' (SPF) is a number quantifying the effectiveness of sunscreens against UVB radiation (see **ICOP, Annex O, O.5**). SPF is measured in a laboratory under standardized conditions, so caution should be used when estimating the time a person can actually stay in the sun.

5.7 SPF may be rated not only in numbers (e.g. SPF 30) but also by description, intended to make the SPF system easier to understand:

- low protection (SPF 6 to SPF 14)
- medium protection (SPF 15 to SPF 29)
- high protection (SPF 30 to SPF 50)
- very high protection (SPF 50 plus)

[1] https://www.osha.gov/SLTC/heatillness/heat_index/pdfs/all_in_one.pdf

5.8 The following should also be considered:

- appropriate personal protective equipment, e.g. clothing, sun glasses, etc.
- radiant heat, e.g. machinery, exhausts, flares, etc.

# 6 ACTION

6.1 Review your management system's procedures for protection against environmental conditions.

| **Case Study** |
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| A technician was working inside a tank and felt faint, due to the high heat conditions. The technician exited the tank. A 'safety stand-down' was held and all technicians to be hydrated. Water bottles were issued. Technicians were told to take regular breaks to ensure they didn't become faint, or over exert themselves in high temperatures. |

# 7 REFERENCES

7.1 Further information can be found in:

(a) IRATA International code of practice for industrial rope access (Third edition, September 2016)[2]:

- Annex O: Protecting rope access technicians against environmental conditions

7.2 For a list of current (and past) 'safety communications' by IRATA, see www.irata.org

# 8 RECORD FORM

8.1 An example *Safety and Health Topic Sheet: Record Form* is given below. Members may have their own procedure(s) for recording briefings to technicians and others.

# 9 FURTHER READING

Using the Heat Index: A Guide for Employers[3]

- Available online at

[2] www.irata.org/default.php?cmd=215&doc_id=4336
[3] http://osha.gov/SLTC/heatillness/heat_index/

| **IRATA SAFETY AND HEALTH TOPIC SHEET – RECORD FORM** | | | |
|---|---|---|---|
| **Site:** | | | |
| **Date:** | | | |
| **Topic(s) for discussion:** | | Topic Sheet No. 14:<br>Protection against environmental conditions | |
| **Reason for talk:** | | | |
| **Start time:** | | **Finish time:** | |
| **Attended by**<br>*Please sign to verify understanding of briefing* | | | |
| **Print name:** | | **Signature:** | |
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| *Continue overleaf (where necessary)* | | | |
| **Matters raised by employees:** | | **Action taken as a result:** | |
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| *Continue overleaf (where necessary)* | | | |
| **Briefing leader**<br>*I confirm I have delivered this briefing and have questioned those attending on the topic discussed.* | | | |
| **Print name:** | | **Signature:** | **Date:** |
| **Comments:** | | | |