



Technical Guideline **DEALING WITH ADVERSE WEATHER CONDITIONS**

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1- Introduction

- Although the United Arab Emirates is generally blessed with a stable climate and abundant sunshine, there are still times when adverse weather conditions can add to the risks that are associated with work and the workplace. These risks emanate from a variety of weather conditions such as heavy rainfall, fog, dust / sand storms, lightning strikes, or high winds.
- As with all the risks, it is vital that employers ensure that adverse weather hazards are considered within the risk management program and to ensure that control measures be developed in order to mitigate any potential risks facing their employees and all individuals who may be impacted at the workplace. This document aims to provide advice and guidance for employers and employees on the risks associated with adverse weather that may impact the activities and employees at the workplace and to provide information on the control measures that can be considered in in order to mitigate these risks.

2- Risk Management

- It is a requirement under OSHAD-SF - Element 2 - Risk Management that all entities implement a robust risk management program and as part of this program, hazards such as adverse weather must be considered when they pose a risk to occupational safety and health.
- When undertaking a risk assessment on your activities it is vital to consider how the task could be affected due to adverse and changing weather conditions. Some examples of how adverse weather can affect the workplace and possible controls are included below in table one.

Weather Conditions	Hazard	Possible controls
Fog	Reduced visibility on roads may lead to vehicle collisions	<ul style="list-style-type: none"> Vehicle speed to be reduced, keeping a longer gap from the vehicle in front Fog lights to be used Vehicle to be driven using dipped headlights If visibility becomes very poor, driver to pull over in a safe place until it improves Use of high visibility clothing Warning alarms (audio and visual) for plant and equipment
	Reduced visibility of pedestrians	
Rain	Reduced visibility and increased stopping distances may lead to vehicle collisions	<ul style="list-style-type: none"> Windscreen wipers to be kept in good condition Vehicle speed to be reduced, with at least a four-second gap (see note) from the vehicle in front Lights to be used if visibility is poor Screen heater to be used to prevent misting
	Slippery surfaces caused by heavy rainfall (entrances to offices, hotels, retail etc)	<ul style="list-style-type: none"> Appropriate signage provided Good housekeeping in place Non-slip rugs or mats provided at entrance
	Flooding/ unstable structures (construction sites) due to heavy rain and/or wash out of sand	<ul style="list-style-type: none"> Regular inspections Equipment secured Stop the work Clear surrounding areas
Wind/ Sandstorms	Objects overturned Objects blown loose from fittings	<ul style="list-style-type: none"> Regular checks and maintenance High risk items including scaffolding structures, heavy cranes etc. removed or secured during extreme high wind Follow manufacturer's instructions Stop the work in high winds
	High winds may lead to driver losing control of the vehicle.	<ul style="list-style-type: none"> Vehicle speed to be reduced, maintaining a steady course Drivers to keep a safe distance from other vehicles Drivers to avoid overtaking, especially high-sided vehicles and very small vehicles Consider postponing any driving
	Reduced visibility due to sandstorms	<ul style="list-style-type: none"> Vehicle to be driven using dipped headlights If visibility becomes very poor, driver to pull over in a safe place until it improves Warning alarms (audio and visual) for plant and equipment Use of high visibility clothing

Table One - common hazards during adverse weather conditions

*Note: A four second gap between vehicles is a general rule to ensure that sufficient space and time is available to perform an emergency stop without hitting the vehicle in front. This is measured by counting from a fixed point the vehicle in front has passed until your own vehicle passes the same point - i.e. 1 thousand 1, 1 thousand 2 etc.

- The table above provides only a few examples of the hazards that can be present due to adverse weather, these can change dependent on the industry and activities which are being undertaken. For example the construction industry will be affected a lot more by adverse weather than an office complex.
- Employers should ensure they have considered adverse weather within their risk management program, otherwise this should be reviewed and any foreseeable adverse weather events included in the program. Go through all the documented risk assessments for the workplace and ask how these could be affected by adverse weather.
- Detailed guidance on how to undertake a risk assessment is available within OSHAD-SF - TG - The Process of Risk Management.

3- Emergency Management/ Incidents

- Employers must consider adverse weather conditions when developing emergency response plans as per the requirements of OSHAD-SF - Element 6 - Emergency Management.
- As part of the employer's risk assessment program discussed in section 2, they will have identified scenarios that require full emergency response plans to be developed.
- Review the emergency plans that have already been developed and ensure that where applicable, any requirements related to adverse weather conditions have been incorporated.
- As with all emergency plans, staff training is a vital element and this should include training on how to deal with adverse weather conditions.
- Incidents that occur during adverse weather conditions, shall, if work related, be managed in accordance with the requirements of OSHAD-SF - Mechanism 11.0 - Incident Notification, Investigation and Reporting.

4- Set a Procedure

- As an employer, consider developing a procedure for managing adverse weather conditions, this will help to set the standard on how to manage these issues and also take away any uncertainty for employees if they are caught up in adverse weather conditions.
- Through the risk management program, employers will already have identified risks that are most likely to affect their undertakings. Review the identified risks and look at developing procedures to reduce the risk.
- These procedures can be very simple documents that provide guidelines and standards that are to be followed during times of adverse weather.

4-1 Roles and Responsibilities

- A crucial element when setting any procedure is to develop clear roles and responsibilities for employees within the organization. These will differ within entities however below are some key requirements that will need to be considered and assigned in relation to risk management for adverse weather conditions:
 - defining internal requirements for managing adverse weather program;
 - assigning authority levels for decision making throughout the organization;
 - responsibility for monitoring weather reports;
 - escalation process throughout the organization;
 - training and awareness for employees within the organization; and
 - communication with employees following an adverse weather alert.
- OSHAD-SF - Element 1 - Roles, Responsibilities and Self-Regulation includes detailed requirements that all entities must consider when discussing roles and responsibilities.
- Further guidance is also available within OSHAD-SF - GD - OSH Roles and Responsibilities.
- When developing a procedure also consider other persons that may be affected within your workplace, such as contractors, visitors or members of the public.

4-2 Authority Levels

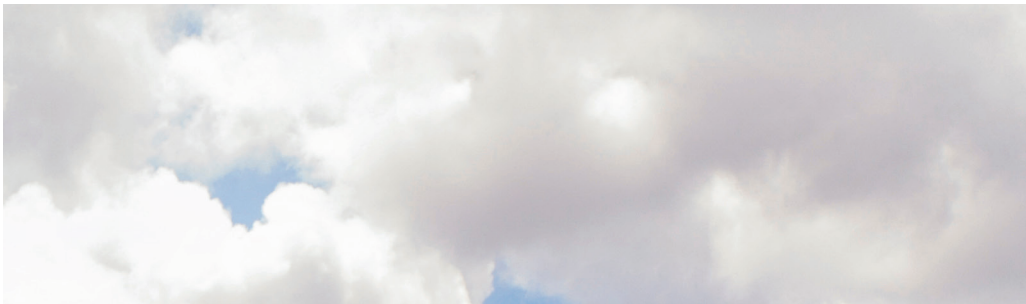
- When developing a procedure, set defined authority levels throughout the organization for adverse weather conditions. These levels will define who can take what action and when. It is important to note that adverse weather conditions can come in very quickly and as such consider giving authority to staff at much lower levels in the organization than normal as they will be able to see the direct effects of the weather as it happens.
- Table two below provides some guidance and examples on suggested authority levels within an organization. Positions within each entity will differ, along with the authority levels given.
- As part of developing procedures, carefully consider what the impacts are of each hazard and from this who will be best placed to make informed decisions on what action to take.
- Table two below has been developed using the RACI format, which for the purposes of this document is as follows:
 - R (Responsible) = Authorized to take action
 - A (Accountable) = Accountable for all actions
 - C (Consulted) = on all decisions taken (prior to action)
 - I (Informed) = of decision

	Weather Severity Level				
	Insignificant	Minor	Moderate	Major	Catastrophic
CEO/ COO	I/A	I/A	I/A	I/A	I/A
HR Director	I / C	I / C	C	C	C
OSH Director	R	R	R	R	R
Project Director/ Manager	C	C	R	R	R

Table Two - possible authority levels within an organization

4-3 Employees

- An important factor when developing a procedure is to identify the location of your employees and their travel requirements. This will help when disseminating weather alerts.
- As part of the program, identify all home locations for your employees and also how they travel to the workplace. It is also useful to identify their normal travel times.
- From this information define clusters of staff by location and from this alerts issued can be for specific areas within Abu Dhabi rather than just general to all staff.
- Using this information will also allow more control over how to manage employees during adverse weather conditions as employers will be able to monitor weather conditions in specific areas and give real time information to employees on the actions they should take.
- Also consider identifying key roles within the organization as part of managing employees. This may help to redirect employees to different worksites or projects based upon their role. As an example there may be administrative assistants or project managers who are unable to travel due to heavy fog or rain in their area, however their colleagues are based elsewhere in Abu Dhabi and can travel so can help cover the role on a project different than theirs until such times as the weather becomes more manageable.
- Also consider staff that may be on leave or that work shifts as different communication may be required.



4-4 Provide clear instructions

- Within the procedure set clear instructions for each type of weather condition, this will help reduce confusion and conjecture when adverse weather is a hazard.
- As an example, if you state within the procedure that staff should not drive during heavy rainfall, this statement is open to interpretation as heavy rainfall will mean something different to people from different countries or cultures. A more precise way of stating this could be that employees will not drive during heavy rainfall which has reduced visibility and / or has created flooding on the roads.
- Information around adverse weather conditions is available from Abu Dhabi Police GHQ (General Headquarter) and the National Centre of Meteorology and Seismology website. Refer to section 5 for information on monitoring weather alerts.
- Develop clear guidelines for each adverse weather condition; this will assist responsible staff when deciding if alerts need to be sent out to all employees.
- Table Three below has some information that can be used when deciding what the risk levels are for different types of adverse weather.

Weather Condition	Weather Severity Level				
	Insignificant	Minor	Moderate	Major	Catastrophic
Fog	<ul style="list-style-type: none"> • No fog or expectations of fog 	<ul style="list-style-type: none"> • Light fog, • Could drive with caution • Minor impact on workplaces 	<ul style="list-style-type: none"> • Moderate fog, • Could drive short distances (no motorway) with caution • Moderate impact on outdoor activities 	<ul style="list-style-type: none"> • Heavy-fog • Visibility of less than 100 meters, • Difficult to drive on all roads • Major impact on outdoor activities 	<ul style="list-style-type: none"> • Very Heavy-fog • Visibility of less than 30 meters
Sandstorms / Wind	<ul style="list-style-type: none"> • No Sandstorms and winds, or expectations of occurrence 	<ul style="list-style-type: none"> • Light winds (average speed 15 km/h - gust up to 37 km/h) and / or Sandstorms • Could drive with caution • Minor impact on workplaces 	<ul style="list-style-type: none"> • Moderate wind (gusts over 38 km/h up to 49 km/h(and/ or Sandstorms) • Could drive short distances (no motorway) with caution • Moderate impact on outdoor activities 	<ul style="list-style-type: none"> • Strong wind (gusts over 50 km/h to 75 km/h) and / or sandstorms • Visibility of less than 100 meters • Major impact on outdoor activities and buildings 	<ul style="list-style-type: none"> • Very strong winds (gusts over 75 km/h) and / or Sandstorms) • Visibility of less than 30 meters.

Table Three - Possible Severity Levels

Weather Condition	Weather Severity Level				
	Insignificant	Minor	Moderate	Major	Catastrophic
Rain / Flooding	<ul style="list-style-type: none"> No heavy rainfall/ floods or expectations of occurrence 	<ul style="list-style-type: none"> Light rain and / or light floods Could drive with caution Minor impact on workplaces. 	<ul style="list-style-type: none"> Moderate rain and / or moderate flooding Could drive short distances (no motorway) with caution Moderate impact on outdoor activities. 	<ul style="list-style-type: none"> Heavy rain and / or heavy floods Difficult to drive on all roads Visibility of less than 100 meters Major impact on outdoor activities and buildings 	<ul style="list-style-type: none"> Very heavy rain and / or very heavy flooding Visibility of less than 30 meters.

4-5 Pre Storm Preparation

- Although adverse weather conditions can change very quickly, preparation prior to any adverse weather event will help manage these conditions.
- As indicated above, employers should monitor the weather forecast carefully to allow early identification of any adverse weather conditions that may affect their business and from this information decide what actions may be required.
- Consider developing a checklist for different scenarios, identify actions and allocate responsibility within the organisation to undertake the actions within.
- Consider issues such as:

- remove lightweight or loose objects from open areas;
- inform staff of foreseeable weather conditions and the actions that may be required;
- check any external electrical connections or appliances - consider how they will be managed during adverse weather;
- ensure any large structure (flag pole, crane etc.), trees or large plants are in good / stable condition - high winds may cause these to fall or break off large branches;
- check back up power supplies if these are available, for use in case of total power failure;
- ensure all temporary sheds and roofs are properly secured;
- provide staff with training on what actions to take during adverse weather conditions;
- ensure chemicals or hazardous materials are secured as per applicable requirements and Safety Data Sheets (SDS); and
- check and ensure all open doors and windows in the buildings are properly closed or secured. Storm impact may damage these if left open.

- Table Four below shows some of the measures that you should consider during pre-storm preparation or during adverse weather conditions.

Weather Condition	Possible actions for Severity Levels				
	Insignificant	Minor	Moderate	Major	Catastrophic
Fog		<ul style="list-style-type: none"> • Monitor conditions on an hourly basis 	<ul style="list-style-type: none"> • Employees living long distances advised to travel later. • Non-essential driving/ visits cancelled • Outdoor activities reviewed for safety 	<ul style="list-style-type: none"> • All employees informed to delay travel to office location • All external driving / visits cancelled • All outdoor activities reviewed 	
Sandstorms / Wind	<ul style="list-style-type: none"> • On-going Daily Monitoring 	<ul style="list-style-type: none"> • Projects/ buildings inspected to ensure all items secured/ tied down 	<ul style="list-style-type: none"> • Projects/ buildings inspected to ensure all items secured/ tied down. • Non slip matting provided at entrances/ exits to buildings • Outdoor electrical works reviewed to ensure safety • Lifting operations (external) stopped 	<ul style="list-style-type: none"> • Work at height stopped. • Projects/ buildings inspected to ensure all items secured/ tied down. • Review of travel requirements for employees that need to return home 	<ul style="list-style-type: none"> • All external work stopped
Rain/ Flooding		<ul style="list-style-type: none"> • Close all windows 			

Table Four - Possible actions for indicated severity levels.

4-6 Post Storm Hazards

- It is important to ensure that following a storm, inspections are undertaken to check the safety and integrity of any structures or workplaces that may have been affected by the adverse weather conditions.
- Consider developing checklists that can be used to undertake specific inspections for your premises and allocate responsibility within the organization to undertake the inspection.
- Consider issues including:
 - loose cladding, guttering, signs, tarpaulins etc. that may fall and cause injury;
 - debris on roads which has been blown there;
 - sand dunes/ patches of sand that may form on exposed roads leading to accidents;
 - blocked air conditioning filters due to large build-up of sand / contaminants;
 - stability of any installed scaffolding structure like scaffolding toe boards may have shifted. Make sure scaffoldings are reinspected and provided with Scaffold;
 - any damaged electrical equipment or fittings, opened or flooded cabinets, flooded electrical rooms, loose connections, wiring etc. with potential of electrical shock;
 - flooded cellars, culverts, underpasses;
 - erosion of ground caused by water runoff down embankments (roads, and any structure built near an embankment may be undercut); and
 - large body of water forming on roads or walkways (driving hazard, pedestrian hazard);

5- Monitoring Weather Alerts

- At the present time, several applications for monitoring the weather are available in the marketplace. These applications range from available government websites to smart mobile phones where information can be accessed in real-time.
- It is recommended that the following website is used to gather data and monitor weather conditions in the Emirate of Abu Dhabi:

National Centre of Meteorology and Seismology - <http://www.ncms.ae/en>

- Within this website, comprehensive data can be found on all weather conditions within the UAE, further alerts are also issued by the Abu Dhabi Police GCHQ.
- As part of the procedure, assign responsibility for monitoring alerts and weather conditions to a member of staff, regular checks should be undertaken and the information recorded and where required disseminated throughout the organization.

6- Common Issues

- Risk assessments will identify the risks and subsequent controls measures that are required for the workplace, however below is a list of some of the more common issues that may be encountered during times of adverse weather and should be considered by employers as part of their procedure.

6-1 Heavy Rain/ Lightning/ Flooding



- Although rainfall in the UAE is limited, we can experience up to 8 to 10 mm of rain in one day which can cause occupational safety and health issues within the workplace.
- Lightning is a dangerous natural force. Precautions should be taken to prevent employee exposure to lightning. Employers should recognize lightning as an occupational hazard. Employers and employees at outdoor worksites should take lightning safety seriously, especially where work at height is being undertaken. Employees whose roles involve working outdoors in open spaces, on or near tall objects, or near explosives or conductive materials (e.g., metal) have significant exposure to lightning risks.
- As part of any adverse weather procedure, consider the following during times of heavy rainfall or lightning storms.

6-1-1 General

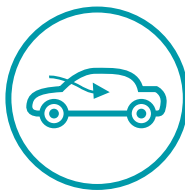
- Issue alerts to all employees in affected areas.
- Issue alerts to all projects in affected areas.
- Consider using only critical electrical equipment during lightning storms, switch off non-essential equipment.
- Inform employees to stay indoors.
- Ensure entrances and exits to buildings are safe and have non slip mats to prevent ingress of water.
- Provide additional cleaning staff at entrance and exit points to buildings where slips and trips could be a risk due to slippery surfaces caused by rainfall.
- Avoid plumbing, including sinks, baths and faucets.
- Ensure employees are aware to:
 - Never lie flat on the ground;
 - Never shelter under an isolated tree or metal structure;
 - Immediately get out and away from ponds, and other bodies of water; and
 - Stay away from objects that conduct electricity (barbed wire fences, power lines, etc.).

6-1-2 Driving

- Ensure employees are aware of the need to:
 - Only drive if safe to do so;
 - Postpone their journey if not essential until the heavy rain subsides;
 - Reduce their speed;
 - Pull over in a safe place if visibility becomes very poor, until it improves;
 - Not to use hazard lights;
 - Ensure tires and windscreen wipers are in good condition; and
 - Not drive close to other cars, and increase the braking distance.

6-1-3 Construction

- Ensure appropriate signage is in place.
- Review the use of electrical installations or plant and equipment during heavy rainfall.
- Review any activities that involve excavations.
- Undertake additional checks of any scaffolding, ladder, heavy equipment etc. that may become unsafe due to heavy rainfall.
- Review the need to undertake outdoor work during heavy rainfall.
- Provide staff with appropriate wet weather clothing if working outdoors.
- Stop work outdoors during electrical (lightning) storms.
- Ensure any chemicals or hazardous materials are secured and covered.
- Check temporary roads and pathways to ensure they are safe for use.
- Check any areas where work at height may be undertaken and ensure it is safe to do so.
- Ensure employees are aware of:
 - The risks of areas with standing water or that may flood; and
 - The need to immediately get off elevated areas such as working platform, scaffolding, etc during lightning storms.



6-2 High Winds



- High winds can be a common issue within the UAE, with speeds known to reach over 100km/h gusts and with recorded sustained winds at 50km/h.
- One of the main risks from strong winds will be to people and loose material which is at a height, as it is more likely to be exposed and therefore more susceptible to high winds. Cranes and towers are particularly at risk and could be toppled due to high wind if not secured correctly. People working at height can be blown to the side, increasing the chances of them falling if there is insufficient side protection to stop them from falling. If the wind is strong, there can be a risk of materials such as roof tiles and fast-moving debris striking a person. Also, the wind can whip up dust and sand which can damage or irritate eyes, as well as aggravating conditions such as asthma.
- Strong winds can also make it difficult to hear properly, so much so that workers may be oblivious to approaching vehicles if they cannot hear them coming.

6-2-1 General

- Review any work at height and outdoor working when the wind speed reaches or gusts higher than 38km/h to ensure it is safe to continue. This review should be based on a risk assessment considering the current and anticipated wind speed, weather conditions, altitude of work being undertaken and any other conditions (hazards) that may affect the safety and health of those undertaking the work or affected by the works.
- Issue alerts to employees.
- Undertake inspections of buildings and projects to ensure any loose material removed and items are secured.
- Ensure all windows are closed and doors only opened as required (high winds can easily cause door to break off their hinges).
- Remove lightweight or loose objects from open areas.
- Stop any lifting operations if wind speed reaches or gusts higher than 38km/h.
- Ensure any cranes or lifting equipment is secured.

6-2-2 Driving

- Ensure employees are aware of the need to:
 - Only drive if safe to do so;
 - Postpone their journey if not essential until the heavy wind subsides;
 - Not to drive in high sided vehicles;
 - Reduce their speed;
 - Ensure tires and windscreen wipers are in good condition;
 - Not drive close to other cars, and increase the braking distance; and
 - Pull over in a safe place if visibility becomes very poor, until it improves.

6-2-3 Construction

- Review any work at height and outdoor working when the wind speed reaches or gusts higher than 38km/h to ensure it is safe to continue. This review should be based on a risk assessment considering the current and anticipated wind speed, weather conditions, altitude of work being undertaken and any other conditions (hazards) that may affect the safety and health of those undertaking the work or affected by the works.
- Ensure that tools are packed away safely and that roofing sheets, cones, signage and other loose materials are safely secured.
- Ensure temporary or site fencing is securely fixed.
- Ensure any chemicals or hazardous materials are secured and covered.
- Use extreme caution when picking up large sections of plywood or similar flat materials, as these can act as a sail.
- Ensure employees are aware of the need to:
 - Use tag lines when hoisting loads with large flat surfaces;
 - Wear protective gear against falls;
 - Not stand near stacks of materials and structures;
 - Wear eye protection to keep dust, debris and other foreign particles from blowing into their eyes; and
 - Ensure hard hats are securely fastened and cannot be blown off their head.

6-3 Fog



- Fog can be particularly dangerous for drivers and workers on a construction site as it greatly reduces the visibility of everyone. The drivers of vehicles will not be able to see very far ahead, meaning that they may not be able to react in time if a person or object is in the roadway. The driver may even drive off the road if they cannot see where the edge is, increasing the chances of them colliding with something or driving over the edge of a steep drop. Along with the visibility issues for the drivers, workers on the ground will also find it difficult to see approaching vehicles and get out of the way in time.
- Fog also causes very hazardous conditions for driving on public roads due to reduced visibility.

6-3-1 General

- Issue alerts to all staff; and
- Review the need to travel.

6-3-2 Driving

- Ensure employees are aware of the need to:
 - Consider the need to drive during heavy / dense fog;
 - Reduce speeds;
 - Not use hazard lights;
 - If visibility is less than 100metres use high intensity fog lamps;
 - Not tailgate and maintain a gap of at least 4 seconds with the car in front (refer to note under section 2);
 - Be patient, it is better to arrive late than not to arrive at all;
 - Beware of drifting fog, density can change quickly, dramatically reducing visibility; and
 - Pull over in a safe place if visibility becomes very poor, until it improves.

6-3-3 Construction

- Employees should wear appropriate high visibility clothing;
- Review heavy lifting activities considering the visibility conditions; and
- Audible and visual warnings activated on plant and equipment.

7- References

- OSHAD-SF
Element 1 - Roles, Responsibilities and Self-Regulation
- OSHAD-SF
Element 2 - Risk Management
- OSHAD-SF
Element 4 - Communication and Consultation
- OSHAD-SF
Element 5 - Training, Awareness and Competency
- OSHAD-SF
Element 6 - Emergency Management
- OSHAD-SF
Element 7 - Monitoring, Investigation and Reporting
- OSHAD-SF
Element 9 - Compliance and Management Review
- OSHAD-SF
Mechanism 6.0 - OSH Performance Monitoring and Reporting
- OSHAD-SF
Mechanism 11.0 - Incident Notification, Investigation and Reporting
- General Secretariat of the Executive Council Circular No. (1) Of 2016 concerning the Road Traffic Safety of the Employees in Bad Weather Condition and Poor Visibility, 28 January 2016.

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