



Health and Safety Technical Guidelines

TG - 08

Noise Management

Produced by

Health and Safety – Facilities & GS Department

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1 Purpose

It is the policy of Qatar University (QU) to put in place safety measures to protect employees, students, visitors, contractors and others who may be exposed to noise levels that may cause harm or the risks of hearing loss.

This Technical Guidance document has been established to comply with the Qatar State Environmental Protection Law (2002): *“Executive By-law for the Protection of the Environment, issued Law No. 30 of 2002”* that outlines allowable environmental and occupational noise levels.

This Technical Guidance document establishes noise management requirements in order to manage potential noise risks associated with QU activities, whether undertaken by QU employees or contractors, where employees, students, visitors, contractors and others who may be exposed to noise levels in excess of those stipulated in the Qatar State Environmental Protection Law (2002).

2 Scope

This Technical Guidance also applies to activities undertaken at QU by employees, students or contractors that may produce in excess of those stipulated in the Qatar State Environmental Protection Law (2002).

3 Responsibilities

3.1 Top Management

- QU Top Management shall allocate sufficient resources for the effective implementation of this Technical Guidance document ensure that QU employees, students, contractors and visitors are aware of their responsibilities through appropriate regulation, delegation and communication.
 - QU Top Management is also accountable for monitoring and reporting HS performance and appropriate programs and actions to ensure compliance with this Technical Guidelines.
 - QU Top Management may delegate responsibilities to the Senior Managers (i.e. Senior Vice Presidents and Associate Vice Presidents), Department Heads and Directors, and Project Managers or Health and Safety Section (**HSS**), as appropriate, for the fulfilment of the requirements under QU HS Policy and associated procedures.
 - QU Top Management shall ensure that protection is provided to employees and visitors against the effects of noise exposure when the sound levels exceed those stipulated in the Qatar State Environmental Protection Law (2002).
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3.2 Health & Safety Section (HS)

- Ensure that staff, faculty, students, visitors and contractors are not exposed to persistent or instantaneous noise that would be detrimental to hearing.
- Ensure that noise risk assessments and reviews for relevant activities are conducted.
- Carry out or arrange a noise survey of all relevant areas periodically and keep records of all noise surveys undertaken.
- Ensure that control measures identified in the noise risk assessment are implemented, monitored and reviewed as necessary.
- Communicate noise risk assessment findings to the relevant personnel.
- Ensure when employees, students, visitors, contractors and others are subjected levels exceeding those listed in stipulated in the Qatar State Environmental Protection Law (2002), then the HS shall implement reasonably practicable administrative or engineering control measures.

3.3 Employees and Contractors

- Employees and Contractors shall undertake their roles and responsibilities in accordance with QU **HSMS – Roles and Responsibilities Procedure** and **QU HSMS – Contractor Management Procedure**.
- Employees and Contractors shall report any activity or equipment defect relating to noise exposures which they believe is reasonably practicable to cause and overexposure to themselves or another person.
- Employees shall use appropriate hearing protection, equipment or safety devices provided by QU in accordance with any training or instruction received.

4 Procedure

4.1.1 Noise Emission Standards

- 4.1.1.1 The Qatar State Environmental Protection Law (2002), Annex (3/ 5th), provides maximum allowable ambient noise limits in Qatar, as presented in **Table 1**. QU is classified as a residential area.

Table 1 Allowable Noise Limits in Qatar

The area	The maximum limits of noise (average 20 minutes)	
	Day time	Night time
Residential areas & public corporations	55	45
Commercial areas	65	55
Industrial facilities	75	75

Residential Areas; is the area in which homes or buildings for residence are more than 50% of the buildings, including schools, hospitals and mosques.

Commercial Areas; is the area in which department stores, business offices, garages and places of work are more that 50% of the buildings.

Industrial Areas; is the area in which industrial facilities are more than 50% of the buildings.

- 4.1.1.2 The Qatar State Environmental Protection Law (2002), Annex (3/ 6th), provides maximum allowable noise limits for closed places of work, as presented in **Table 2**. The Law states that no person is to be exposed to more than (85) decibels except in cases of necessity, taking into consideration the time of exposure as given in **Table 2**.

Table 2 Maximum Allowable Noise Limits for Closed Places of Work

The intensity of noise in Decibels (A) - dB	Exposure per hour
85	8
90	4
95	2
100	1
105	0.5
110	0.25
115	0.125

4.1.2 Noise Monitoring

- 4.1.2.1 The Contractor Environmental Representatives shall carry out noise assessment as stipulated by QU's contract with the appointed Contractor. A threshold limit of 55 dB in the daytime and 45 dB in the night-time shall be adopted within QU Project Site and the contractor shall take immediate remedial action if these noise levels are exceeded. All such incidents and the remedial action taken shall be documented in the Corrective Action Request Form and submitted to HS as outlined in QU *HSMS – Inspection and Audit Procedure*.
- 4.1.2.2 QU shall use a competent person to develop and implement a noise exposure monitoring program and sampling strategy to assess employee's exposure to noise in areas of concern.
- 4.1.2.3 Instruments used to undertake noise monitoring shall be calibrated as per manufacturer's recommendations to ensure measurement accuracy.

4.1.3 Noise Control

- 4.1.3.1 In order to avoid ambient noise exceeding levels stipulated in the Qatar State Environmental Protection Law (2002), Annex (3/5th), QU has developed guidance for noise control. These noise control measures are provided in appendix A of this Technical Guidance Document.
- 4.1.3.2 Where occupational noise levels exceed the limits stipulated in the Qatar State Environmental Protection Law (2002), Annex (3/6th), QU shall develop and implement a hearing conservation program. At a minimum, the Hearing Conservation Program shall outline the following requirements:
 - exposure monitoring;
 - employee notification;
 - audiometric testing program; and
 - Hearing protectors.

4.1.4 Noise Hazard Signage

- 4.1.4.1 Where noise levels, whether ambient noise or occupational noise, exceed limits stipulated in the Qatar State Environmental Protection Law (2002), QU shall ensure that appropriate hazard signage is posted in order to inform employees, students, visitors, contractors and others who may be exposed to these noise levels.
- 4.1.4.2 Clear warning signs shall be posted in languages understood by all.
- 4.1.4.3 These signs shall also notify employees, students, visitors, contractors and others of the requirement for hearing protection, where necessary, when entering the specific work area at QU.

4.1.5 Training Requirements

- 4.1.5.1 Training shall be provided to all employees, students and contractors exposed to noise at or above the limits stipulated in the Qatar State Environmental Protection Law (2002).
- 4.1.5.2 Training shall be conducted during induction for employees, students and contractors.

4.1.5.3 At a minimum, training shall cover the following topics:

- The requirements of this Technical Guidance;
- The health hazards associated with exposure to noise above the limits stipulated in the Qatar State Environmental Protection Law (2002);
- Signs and symptoms of noise exposure and hearing loss;
- types of hearing loss that can be experienced;
- information on QU's hearing conservation program, if available;
- requirement for the use of hearing protectors, how to use them and advantages and disadvantages of hearing protectors; and
- locations within QU where noise hazards exists and the hearing protection required for these areas

4.1.6 Contractor Conformance

- 4.1.6.1 The contractor shall ensure that noise limits are adhered to during the works being conducted at QU
- 4.1.6.2 The contractor's project manager is responsible for ensuring that arrangements are in place to close out all non-conformance raised with respect to noise limit exceedances
- 4.1.6.3 The HS may undertake periodical inspections of the contractors work areas and review project HS documentation to ensure compliance with this Technical Guidance document.
- 4.1.6.4 All non-conformances shall be managed as outlined in QU ***HSMS– Inspection and Audit Procedure***.

5 Document Control

- 5.1.1 This Procedure is a controlled document. The controlled version of this guideline is located on QU Documentation Management System.
- 5.1.2 Any printed copies of this controlled document are reference copies only. It is the responsibility of all of those with printed copies to ensure their copy is kept up to date.
- 5.1.3 Refer to ***QU HSMS – Document Control and Record Retention***.

6 Appendices

Appendix A: Noise Control Guidance

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Qatar University Contractors' Noise Guidelines

- 1 Reduce noise exposure levels as reasonably practicable, by reducing the production of noise or by reducing people's exposure to it, or a mixture of the two.
- 2 Consider alternative processes, equipment and/or working methods which will make the work quieter or mean people are exposed for shorter times.
- 3 Consider noise levels when purchasing new equipment and where possible specify and purchase quieter equipment.
- 4 Consider noise levels when installing or relocating equipment or activities, and where possible make adjustments to minimise noise production.
- 5 Have maintenance arrangements that ensure equipment continues to operate properly and does not become noisier over time.
- 6 Request a noise survey if there are concerns about noise levels in between scheduled or monthly surveys.
- 7 Provide suitable hearing protection to workers where the personal noise exposure is between the lower and upper exposure action values.
- 8 Designate and provide signage for hearing protection zones, where necessary, where exposure to workers is equal to or exceeds the upper exposure action value.
- 9 Keep a record of all workers exposed to noise levels exceeding the upper exposure action value.
- 10 Inform workers where the personal noise exposure is above the upper exposure action value and provide relevant information.
- 11 Where hearing protection is provided, provide suitable training and instruction on correct fitting, maintenance and suitable storage.
- 12 Where hearing protection is mandatory, provide suitable supervision to ensure rules are followed and hearing protection is being used properly.
- 13 Refer employees to a Hearing Conservation Program if they are likely to be regularly exposed above the upper exposure action values, or are at risk for any reason e.g. they already suffer from hearing loss or are particularly sensitive to damage.
- 14 Submit monthly noise monitoring report to HS relevant to the project.

General Noise Control Requirements

Noise is inherent and generally unavoidable in most construction activities, with the most prominent noise emissions typically coming from heavy equipment, earthworks, vehicles or tasks (such as jack hammering). This elevates ambient noise levels in areas within a project site for certain periods (especially as noises travelling further at night), which can affect wildlife and the public. Permissible noise levels are outlined in Qatar State Environmental Protection Law (2002) complied with across QU.

A number of mitigation and management measures can be initiated to reduce noise quality impacts. Engineering controls that eliminate noise at the source or establish a permanent barrier to noise are the preferred method of control.

These control measures include:

- All works and ancillary activities (such as heavy vehicle movement and material deliveries) that are audible at the site boundary will be carried out during designated daytime hours only unless approval has been granted by the client and/or regulatory authority.
- Noisy activities will be restricted to daytime and evening periods only, with no night time working permitted unless approval has been granted by the client and/or regulatory authority (e.g. 24-hour concrete pours).
- Construction activities (such as piling and material deposition) to be minimised on windy days, particularly when blowing in the direction of sensitive receptors.
- Phase construction activities to take into account potential impacts on visitors and employees in adjoining properties and adjacent areas.
- Avoid simultaneous use/operation of noisy equipment, if possible.
- Require operators to shut down all plants and equipment in intermittent use between work periods or throttled down to minimum idling speed.
- Retain existing features such as site office that act as noise barrier until the last phase of the project.
- Erect noise source screening structures such as stores as early as possible to shield the noise sensitive receivers.
- Remove stockpiles and perform excavation works at the side that is furthest away from the NSR to allow earth materials to shield NSRs from noise sources.
- Equipment and plant layout will be – as far as practical – located away from noise sensitive areas and the use of physical barriers, such as hoardings, stockpiles or site buildings will be employed to deflect or disperse noise. Locate facilities such that:
 - Plant and equipment known to emit noise strongly in more than one direction is oriented to direct noise away from the noise sensitive receptors.
 - Noisy equipment and plant (generators and water pumps, etc) be sited as far away from noise sensitive receptors as practically possible.
 - Nearby objects such as water cooling tanks, stockpiles, etc. can be used to shield noise source against noise sensitive receptors as practically possible.
 - Access roads to the site shall be positioned such that vehicular movements cause minimum disturbance to residential buildings.
 - Access to the site is designed so that the need for vehicles to reverse (and thus use their reversing alarm) is minimized.
 - Layout of site grounds ensures minimum noise impacts for conflicting activities (especially between residential, commercial and recreational activities).
 - Consideration will be given to reducing noise by undertaking noisy assembly practices offsite where practicable.

- Erect appropriate buffers (such as fencing, material stockpiles, site accommodation, building walls or a stand of trees or other suitable vegetation) between the source and receptor to absorb the noise.
- Establish acoustic barriers to minimize noise impacts to on-site and off-site land uses, if required.
- Use portable noise barriers/enclosures with skid footing and a small cantilevered upper portion for noisy stationary/mobile plants.
- Use at-source noise controls, so that any noisy equipment is suitably enclosed with an acoustic barrier or other noise reducing method, such as an exhaust muffler:
- Select quiet equipment that produces the lowest noise level whenever possible.
- Ensure communication with nearby sensitive receptors prior to and during works:
- Public billboards shall be erected at the construction sites, listing construction activities, contact persons and telephone numbers.
- Prior to conducting any unavoidable noisy activities near to noise sensitive receptors, notification should be made to the receptors of the plans to keep them informed and updated with the work that is to be undertaken including expected duration.
- Ensure contingency plans are in place to deal with any noise complaints during construction and operation of the Project site. Investigate noise complaints and excesses of any agreed maximum acceptable levels immediately.
- Managing traffic can sometimes reduce noise problems, including:
 - Trucks can be prohibited from certain streets and roads around the site, or they can be permitted to use certain streets and roads only during daylight or night hours.
 - Speeds will be regulated on all internal QU roads, as appropriate.
 - Maintenance and servicing of equipment and vehicles in accordance to manufacturers recommendations, especially for noise mitigation components (e.g. retaining silencers / mufflers supplied with construction equipment and closing generator doors). Records shall be kept.
 - Tyres and tyre pressures must be maintained to reduce friction between the wheel and surface. This will also ensure that the vehicle runs at optimum efficiency.
 - Make sure all plant, machinery and vehicles are regularly maintained and broken parts (such as mufflers) are replaced immediately.
 - Make sure all plant, machinery and vehicles are operated efficiently and according to the manufacturers specifications, by trained and qualified operators.
 - Practice extra caution in materials delivery particularly when dropping from a height. Construction materials should be properly handled so that the minimum noise is generated. Materials should be handled gently and, if possible, cushions should be provided to reduce impact of noise.
 - Loading and unloading of vehicles, dismantling of site equipment such as scaffolding or moving equipment or materials around site will be conducted in a manner as to minimize noise generation and where possible will be conducted away from noise sensitive areas.
 - The Contractor shall submit a plan of activities with numbers of noise generating machines stating projected noise levels.
 - The normal operating noise levels for all vehicles, plant and machinery shall be ascertained and communicated to the users.
 - Discourage raised voices or radios/music at high volumes, particularly at the start of shift or after normal business hours.
 - Site roads should be designed and constructed as level as possible. The elimination of steep inclines helps to reduce traffic noise because motor vehicle engines, especially multi-gear truck engines, do not have to work as hard.
 - Incorporate the use of noise barriers (such as boards, walls, earth mounds and landscaping) along the road side of the Project site to mitigate noise from roads. Other options may include the incorporation of local noise barriers into the Project landscape designed to shield particularly sensitive areas in the Project site.