

MODERN PUBLIC AQUARIUM REGULATIONS

Environmental Regulation No.: EN/004
1st Edition July 2010

ENVIRONMENT DEPARTMENT

ENVIRONMENT, HEALTH AND SAFETY (EHS) DIVISION

TABLE OF CONTENTS

1.0	Permits and Licenses for Aquatic Animals	3
1.1	Application Process	3
1.2	Animal Acquisition	3
1.3	Import of Aquatic Animals	4
1.4	Export of Aquatic Animals	4
1.5	Release of Animals	5
1.6	Transport Permit	6
1.7	Facility License	6
1.8	Scientific Research Permit	6
2.0	Facilities and Operating Standards	7
2.1	Facilities – General	7
2.2	Facilities – Indoor	9
2.3	Facilities – Outdoor	9
3.0	Aquatic Animal Health and Husbandry Standards	10
3.1	Feeding	10
3.2	Water Quality	11
3.3	Sanitation	15
3.4	Employees	16
3.5	Record-keeping	16
3.6	Safety of Records	17
3.7	Veterinary Care	17
3.8	Quarantine	18
4.0	Display and Interaction Standards	20
4.1	Education Programs	20
4.2	Animal Husbandry Team	21
4.3	Security	22
5.0	References	22

1.0 Permits and Licenses for Aquatic Animals

1.1 Application Process

EHS, with its mandate to regulate activities and projects related to Environment, Health and Safety in particular within marine life habitat, is responsible for the issuance of all permits and licenses pertaining to the capture, care, handling and housing of aquatic animals. These include wild collection permits, facility license, transport permits, care and husbandry, import/export permits and release of captive animal permits, species enhancement, and scientific research.

1.2 Animal Acquisition

Permission is only granted for the acquisition of aquatic animals for the purposes of scientific research, education, public display and / or enhancement of the species. No other activity shall be allowed by EHS and be given permit and license other than for these purposes. All actions related to collection, acquisition, transport, display and others should not commence without prior authorization from EHS.

To obtain a permit authorizing collection, an applicant must meet applicable statutory requirements in UAE, particularly those related to veterinary quarantine or control over international trade in endangered species, Law No 11 of 2002 (CITES), its executive regulation and relevant resolutions, and UAE Federal Law No 23 of 1999 regarding fisheries and other relevant ministerial resolutions on the protection and development of the environment particularly the aquatics. Permits will be issued only when [1] the effect of the take on aquatic animals in the wild is considered to ensure the sustainability of the concerned species in the wild based on existing studies (e.g. resource inventories, lists from IUCN etc.), [2] the method of the taking is environmentally acceptable (non-use of chemical etc.) and [3] an institution is registered or licensed by EHS as accredited facility for public display.

All collections must be conducted using the most up to date practices as they apply to the animal and environmentally safe capture and handling of aquatic animals. EHS shall accredit registered fishing boats/fishermen to become authorized collectors who will be given special permits to engage in to live aquarium fish collection. Standards on required equipment, methodology and other concerns will be provided and looked into based on a plan to be submitted with specifics as to the following:

- Qualifications of persons / team leading the collection process
- Specific means of collection
- Species of animals to be collected
- Number of animals to be collected
- Location at which animals are to be collected
- Timeframe for acquiring animals
- Emergency protocols

Monitoring the statistics will be through monthly reports on collected and traded live aquatic animals specifying the number, species, traded amount among other relevant information to be prepared by the accredited fisherman. Monthly reports should be regularly submitted by the accredited fisherman. Non-submission for three (3) consecutive months would mean cancellation of permit. Operating facilities on the other hand are required to submit a consolidated list of acquired aquatic life, the species, number, cost, collector/source among other relevant information related to their acquisitions. The facility will be charged an Environmental User Fee computed from the total monthly acquisition cost.

1.3 Import of Aquatic Animals

Importing aquatic animal for any purpose requires an import permit. A public display facility receiving an imported animal must be a licensed facility as described in section 1.8. All applications for import permits must:

- State the species of animals to be imported
- State the number of animals to be imported
- Certificate of Origin
- Health certificate
- Invoice
- Purpose of the import
- Permits for the transport/shipment related to the import can be processed through EHS
- Permits of source facility from other statutory Authorities (CITES etc.)
- Others

1.4 Export of Aquatic Animals

- a. Restrictions: Export or re-export of aquatic animals is only allowed for purposes of scientific research, enhancement of the species or public display (involving aquatic animals born in a UAE licensed facility or the re-export of aquatic animals imported into the UAE). UAE aquatic animals for export will be considered on an individual basis. This will allow a facility not located in the UAE to display animals, which could enhance the standing and understanding of UAE waters abroad.
- b. Foreign receiving facility – General Conditions:
 - To meet registration and / or licensing standards comparable to those applicable in UAE.

- Before aquatic animals may be exported from the UAE, the foreign receiving facility must submit sufficient government-certified documentation to the EHS demonstrating the adequacy of the facilities. Inspection of a foreign facility by a qualified individual for comparability with UAE standards may be recommended to ensure a comparable interpretation of standards. All applications for export permits must:
 - State the species of animals to be exported
 - State the number of animals to be exported
 - State the purpose of export to the foreign country
 - All exports also require a transport permit as described in section discussing transport provisions and regulations
 - All other permits of source facility from other statutory Authorities (CITES etc.)
 - Permits / license of receiving facility
 - Others
- c. Foreign receiving facility – Special conditions for scientific research and enhancement of the species:
 - To offer its proposal about the supposed scientific research or enhancement of the species based on recognized standards comparable to those applicable to UAE.
 - To maintain facilities for the public display of aquatic animals that are open to the public on a regularly scheduled basis and that access to such facilities is not limited or restricted other than by charging of an admission fee or those conditions required to maintain a secure and safe operation.
 - To maintain a conservation education program relating to aquatic animals in accordance with professionally recognized standards.

1.5 Release of Animals

Release of a native aquatic animal is restricted to those that are in perfect condition or those with acceptable justifications for release and has not been subjected to any chemotherapeutic treatments, unless those treatments are with approved drugs suitable for aquaculture or food fish. EHS may appoint a special committee of recognized experts to review and make recommendations prior to the issuance of a permit.

Release of non-native exotic species is highly prohibited by this regulation and any entity who or which will be found violating this shall be dealt with by EHS accordingly. This covers effluent discharge, which may contain gamete during reproduction, which may cause accidental introduction of alien species.

1.6 Transport Permit

Local transport and any form of shipment of aquatic animals from within UAE should secure a transport permit from EHS. Any conveyance should qualify with standard specifications for the designs and facilities to ensure safe transport of the contained aquatic animals. EHS will accredit fishermen who will engage into live aquatic fish collection and transport. License provision will be based from the suitability of special equipment in their conveyance like aerators, tanks, tubs etc.

1.7 Facility License

A facility for housing aquatic animals for any lawful purpose must obtain a facility license from EHS in order to maintain aquatic animals. The facility permitted to house aquatic animals shall meet all the requirements found in the applicable regulations as specified in Section 2 (Facilities and Operating Standards) and set forth in Section 3 (Animal Health and Husbandry Standards) and Section 4 (Display and Interaction Standards) of this document. Each facility shall pass an initial inspection by the EHS. Facilities are also subject to periodic re-inspections to allow continued monitoring of compliance.

1.8 Scientific Research Permit

- a. Permit – A permit is required for scientific research involving aquatic animals unless otherwise allowed by a general authorization issued by the EHS for certain activities. The application must demonstrate that the research is required to further a bona fide scientific purpose..
- b. General Authorization – EHS may authorize some less invasive activities involving bonafide scientific research through a general authorization.
- c. Information Required – the EHS may require the following information with respect to scientific research activities:
 - The species or stocks of aquatic animals involved
 - The geographic location of the research
 - The period of time over which the research will be conducted
 - The purpose of the research
 - Methods to be used to conduct the research

2.0 Facilities and Operating Standards

2.1 Facilities – General

a. Construction Requirements

- Holding and displaying facilities for aquatic animals shall be structurally sound and shall be maintained in good condition to protect the animals from injury, to contain the animals and to restrict the entrance of unwanted animals.
- Aquatic animals shall be provided with protection from abuse and harassment by the viewing public by the use of a sufficient number of employees or attendants to supervise the viewing public or by physical barriers such as fences, walls, glass partitions and / or distance.
- All enclosures and tanks built to house aquatic animals should be made of materials, which facilitate proper and easy cleaning, disinfection and shall be maintained in good condition as part of regular maintenance program.
- Enclosures should meet the standards with regards to space and depth for the number and size of stocks of aquatic life to be placed in the facility. Space requirements and the considerations are discussed in detail in the succeeding sections of this regulation.

b. Water and Power Supply

Reliable and adequate sources of water and electric power shall be provided by the facility housing aquatic animals. Written contingency plans must be submitted to and approved by EHS regarding emergency sources of water and electric power in the event of failure of the primary sources, when such failure could reasonably be expected to be detrimental to the good health and well-being of the aquatic animals housed therein.

c. Space Requirements

A defined formula to compute size of tanks used for public aquarium is open-ended given the diverse designs intended for display enclosures. While fish stocking limit can follow a standard of 1 inch of fish per 4 gallons, number of fish and space to be provided would vary if other factors will be incorporated. Instead, key basis for fish stocking is presented in this section to have a guideline in considering number and species of fish to be stocked in an aquarium. These considerations include:

- Bio-load – the waste produced and nutrients taken-up by the living organisms in the closed marine system contribute directly to the fish-stocking limit. This is not easily measured and based on the fish length but with how much waste the fish contributes to the system. It has to be considered that an increase in the bacteria and microbe numbers goes with the addition of fish to the system. Species and its feeding behavior as well as the amount of food to be provided should be considered to have a safe basis in utilizing this consideration.

- Bio-load Capacity – the capacity of the marine system to handle wastes put into it and nutrients taken away is a prime factor to the fish-stocking limit. The rate of the bio-load placed in the marine system must be processed in the marine system fast enough to not poison the fish thus considering the capacity to process nutrients should be of importance. Listed below are some facilities that can be applied to resolve this issue:
 - Filtration – one of the foundations of the bio-load capacity of allowing more aquatic animals in the marine system, which should be avoided with the absence of filtration facility. Mechanical filters may be added to the system to help process wastes. This would serve as collection points of waste but also as part of biological filter, which serves for the purpose of increasing biological capacity and removing wastes. Either with or without filtration equipment, chemical levels should be maintained as outlined in Section 3.2f at all times.
 - Circulation – water flow and circulation must be uniform, complete and adequate to maintain proper aeration levels and chemical levels as outlined in Section 3.2.f.
- Fish Behavior – this puts into consideration the natural behavior (benthic or pelagic etc.) of fish based on its requirements of swimming space, substrate space, or whatever habitat it has evolved to in the ocean. This point also considers compatibility of species. In a multi-species tank, the individual behavior should be assessed to arrive at computing the space requirement. Swimming space should be provided if pelagic would be stocked while providing territorial bottom substrate space for bottom dwellers.

d. Drainage

Drainage effluent from holding tank or display shall be disposed of in a manner that complies with all applicable pollution control laws in the Emirate.

e. Storage

Supplies of food shall be stored in facilities, which adequately protect such supplies from deterioration, molding or contamination by vermin. Refrigerators and freezers shall be used for perishable food. No substances, which are known to be or may be toxic or harmful to aquatic animals shall be stored or maintained in the aquatic animals food storage areas.

f. Waste Disposal

Provision shall be made for the removal and disposal of animal and food waste, dead animals, trash and debris. Disposal facilities shall be provided and operated in a manner, which will minimize vermin infestation, odors and disease hazards. All waste disposal procedures must comply with all applicable pollution control laws in the Emirate, with protection of the environment and with public health requirements.

g. Washroom Facilities

Washroom facilities shall be provided to maintain cleanliness among employees and attendants.

2.2 Facilities – Indoor

a. Ambient Temperature

The air and water temperatures in indoor facilities shall be sufficiently regulated by heating or cooling to protect the aquatic animals from extremes of temperature, to provide for their good health and well-being and to prevent discomfort in accordance with the currently accepted practices as cited in appropriate professional journals or reference guides, depending upon the species housed therein. Rapid changes in air and water temperatures shall be avoided.

b. Lighting

Lighting for aquatic animals shall be sufficient for the needs of the animals, by natural and / or artificial means, and of a quality, distribution and duration, which is appropriate for the species involved. Sufficient back of house lighting must be available to provide uniformly distributed illumination, which is adequate to permit routine inspections, observations and cleaning of all parts of the area and life support systems. Lighting design should be considered to avoid overexposure and excessive illumination of aquatic animals.

2.3 Facilities – Outdoor

a. General Provisions

- Newly arrived imported animals should be allowed to become fully acclimatized into their new environment. In some cases, this may be a gradual process
- Tanks for aquatic animals need to be adequately aerated, according to the number kept in each tank, and must be heated or cooled according to the needs of the species. Environmental parameters (e.g. salinity, water quality) must be suitable for the species
- Any natural materials (e.g. plants and their products, such as seeds or fruit) or any introduced non-natural materials (e.g. paint, chemicals, treated substrates and treated water) should be assessed for toxicity to the species held before use
- All plant and fixed equipment, including electrical apparatus, must be installed and maintained in such a way that it will not present hazard to animals and people, and assure safe and un-disrupted operation
- Where environmental quality is dependent on external utilities, adequate backup facilities must exist in case of failure
- Adequate provision must be made for servicing, maintenance and uninterrupted operation of life-support systems
- Proper standards of hygiene, both in the personal hygiene of staff and in exhibits and back of houserooms should be maintained. In particular:

- Special attention must be given to the management and appropriate cleaning of exhibits and equipment within them, to reduce the risk of disease. Regular monitoring of water quality is required
- Suitable cleaning agents must be readily available, along with supplies of water and the appropriate safe means to apply them

3.0 Aquatic Animal Health and Husbandry Standards

3.1 Feeding

a. Requirements

The food for aquatic animals shall be wholesome, palatable, and free from contamination and of sufficient quantity and nutritive value to maintain all of the aquatic animals in a state of good health. The diet shall be prepared with consideration for age, species, condition, size and type of aquatic animals being fed. Aquatic animals shall be offered food at least once a day, except where the husbandry of the animal does not require it to be fed daily.

b. Food Receptacles

Food receptacles shall be cleaned and sanitized after each use.

c. Persons Responsibility for Feeding

Food, when given to the aquatic animals, shall be given by an employee or attendant responsible to management who has the necessary knowledge to assure that the aquatic animals receive an adequate quantity of food to maintain them in good health. Such employee or attendant is required to have the professional ability to recognize deviations from a normal state of good health in each aquatic animal so that the food intake can be adjusted accordingly. Public feeding shall be only permitted if it is done in the presence and under the supervision of a uniformed employee or attendant. Such employee or attendant must assure that the aquatic animals are receiving the proper amount and type of food.

d. Food Preparation and Handling

Food preparation and handling shall be conducted so as to minimize bacterial or chemical contamination. Frozen fish or other frozen food shall be stored in freezers, which are maintained at a maximum temperature of -18°C (0°F). The length of time food is stored and the method of storage, as well as the thawing of frozen food, shall be conducted in a manner which will minimize contamination and which will ensure that the food retains nutritive value and wholesome quality. The thawed product shall be kept iced or refrigerated until a reasonable time before feeding. All foods shall be fed to the aquatic animals within 24 hours following the removal of such foods from the freezers for thawing.

e. Aquarium divers must operate to current UAE Approved Codes of Practice. Divers must also receive training about the behavior and requirements of the species with which they are diving.

- f. Feeding techniques vary, for example, some institutions favor stick-feeding of sharks, but hand feeding may be acceptable if risk assessments have been carried out and insurers agree.

3.2 Water Quality

- a. Exhibits and holding tanks shall not contain water, which would be detrimental to the health of the aquatic animals contained therein.
- b. Although water quality requirements of different species vary, it is important that certain basic parameters are monitored and recorded, and that due care is taken to cater for particular species requirements.
- c. Water quality monitoring should be carried out as routine: for new exhibits or ones that have undergone major servicing, daily monitoring should include temperature, salinity (as ppt or as SG in salt water tanks), pH, and nitrite, ORP and/or HOBr and, on a twice a day basis, dissolved oxygen and total ammonia (to assess unionized ammonia). After a one-month period, if a tank is stable, tests can be carried out daily at all times for temperature, salinity, pH, ORP and/or HOBr, dissolved oxygen. In addition, there must be provision of sufficient water treatment equipment to ensure the maintenance of water quality within set parameters to meet species-specific requirements.
- d. Public aquaria should use professional standard water quality test kits. There should be some quality control of test procedures, either by parallel sampling or by calibration against set standards.
- e. Aquarists should have access to on-site laboratory facilities, such as basic microscopy, and be trained in sample collection.
- f. Specific water quality tolerances and requirements vary considerably, but typical maintenance ranges for water in the tank would be:

	Marine	Freshwater
NH ₃	< 0.05 ppm	< 0.10 ppm
Carbonate Hardness	6,500 mg/L	< 200 mg/L
Nitrite	< 0.1 ppm	
Nitrate	< 20 ppm	
O ₂	> 6 mg/L	> 6 mg/L
pH	7.9 – 8.4	Determined by species requirements
Hypobromous Acid	0.02 – 0.07 mg/L	
ORP	< 450 mV	
Salinity	30 – 44 ppt	

- When the water is chemically treated, the chemicals shall be added in a way that will not cause the stirring up of organisms, the gravel and un-dissolved particles into the solution. This can cause drastic change in pH, temperature, salinity, concentration and type of dissolved and un-dissolved organics that can cause harm or discomfort to the aquatic animals.
- Water samples shall be taken and tested daily for Hypobromous or ORP if the facility is using Ozone and at least daily for pH and any chemical additives (eg chlorine and copper) that are added to the water to maintain water quality standards. Facilities using natural seawater shall not be exempted from pH and chemical testing because water pH change drastically if not enough new water is used. Records must be kept documenting the time when all such samples were taken and the results of the sampling. Records of all such test results shall be maintained by management for a minimum 1-year period and must be made available for inspection purposes on request.

g. Filtration and Water Flow

Water quality must be maintained by filtration, chemical treatment or other means so as to comply with the water quality standards specified in this section. As systems may be deemed an open system (new ocean water added with or without filtration) water flow must be maintained such that temperatures, dissolved oxygen levels, pH and total ammonia, nitrite levels are maintained at all times in accordance with Section 3.2f. Temperatures may vary according to the species specifics but temperature cannot be allowed to have a detrimental affect on the health of the animals.

h. Diving Regulations during Cleaning / Maintenance Work

For minimized risk and to assure safety during operation of the public aquaria particularly during cleaning and maintenance work, safety diving policy should be designed and followed by the proponent. This should cover dive activities when one or more divers are at work. All operating standards, which cover this thematic point, should be contained in a dive manual discussing the procedures and acceptable practices of the facility on diving activities.

The policy should also cover guest divers should there be dive programs offered by the facility. Other reasons for diving to be covered by this policy include, but are not limited to the following:

- Diving during maintenance
 - Improving efficiency of filters – removal of load
 - Removal of algae and detritus for aesthetics and to maintain good water quality
 - Removal of particulates, Cyanobacteria, hydrogen sulfide accumulation in sand to maintain good water quality
 - Visual monitoring of fish health
 - Removal of animals for routine health checks

- Removal of animals in cases of disease or injury
- Installation and replacement of substrate and theming
- Diving for feeding
 - Maintain healthy livestock by providing balanced and controlled diets to different species
 - Target specific species for feeding to reduce predation, to control aggression and enable drug administration
- Educational Diving
 - Enhance visitor experience through diver interaction and a closer experience with the animals (particularly in swim-through exhibits)
 - Educational messages through diver presentations for visitors which cover conservation issues, animal biology and behavior
 - Opportunities for question and answer sessions with visitors
 - Training for public e.g. dive courses, shark awareness courses
 - Training for staff e.g. emergency drills, livestock transfers, new staff acclimation to feeds and maintenance
- Research – using diving as a method to enable closer observation for research on topics such as animal husbandry, hydrodynamics, water chemistry, corrosion, animal behavior, nutrition, breeding and disease.
- Special Events
 - Function events/corporate hospitality e.g. evening feeds, diver presentations
 - Media diving e.g. celebrities diving in tank, public awareness events

General – in any diving occasion, a minimum of two divers should be observed headed by a dive supervisor. All personnel who should carry out this responsibility should be accredited by EHS prior to any dive assignment. This information should be contained in the submitted documents to be reviewed and approved by this Authority.

Dive Team Composition – the diving team specified in the dive manual of the facility and assigned to carry out one of the purposes specified above should be composed of a dive contractor, dive officer, dive supervisor, divers and one or more tenders. The number of divers and size of the team will be dictated by the size of the aquarium and type of dive. The responsibilities of each member of the team are as follows:

Dive Contractor	<p>The diving contractor is the person who plans and conducts a diving project. No diving work may go ahead without a diving contractor being appointed. The diving contractor has the main responsibility under EHS to ensure a safe diving project. The diving contractor should ensure that the diving project is planned, conducted and managed in a safe way.</p> <p>The dive contractor specific responsibilities are as follows: a) Employ the divers taking part in each diving project b) Appoint the diving officer, in writing, along with an accurate description of their responsibilities c) Appoint the diving supervisors in writing. Copies of the written appointment must be held on file and the names of each supervisor must be recorded on the daily dive logs d) Ensure safe diving is planned, and conducted in a safe way.</p>
Dive Officer / Supervisor	<p>The diving officer/supervisor has overall responsibility for the safety of the diving project, and must be appointed in writing by the diving contractor. This includes ensuring that:</p> <ol style="list-style-type: none"> 1.) Dive regulations relevant to the diving operations are issued 2.) Suitable risk assessments and diving project plans are provided 3.) The dive location is safe and suitable for the diving operation 4.) Records of all qualifications, training and experience of all team members and the renewal dates for medicals, first aid and oxygen administration is kept up to date 5.) The team is medically fit to dive 6.) Suitable plant and equipment are provided and properly maintained 7.) Records of service for all relevant diving equipment are kept 8.) Suitable and sufficient people are able to provide first aid and oxygen administration 9.) Adequate first aid and emergency equipment is available
Dive Tender	<p>The criteria for a dive tender are as follows:</p> <ol style="list-style-type: none"> 1.) Must be adequately trained in the communication signals, surface rescue procedures and safety requirements used in the diving operation 2.) Does not need to be a qualified diver 3.) Does not need to be medically fit to dive 4.) Must be a minimum of 18 years of age 5.) Must be physically capable of rescue duties
Divers	<p>Divers have a number of responsibilities. These include:</p> <ol style="list-style-type: none"> 1.) Holding an approved qualification for diving 2.) Being competent to work safely 3.) Holding a valid certificate of medical fitness to dive 4.) Complying with the directions of the supervisor and the dive plan 5.) Maintaining a daily record of their dives which they should keep for at least two years

Qualifications – as a minimum requirement, all aquarium divers must have the following:

- ✓ Certificate from PADI, BSAC, CMAS, NAUI, SAA or any other recognized scuba diving body
- ✓ Divers must be medically fit, with an annual EHS accreditation

The following are desirable qualifications of which a percentage of the divers must have:

- ✓ First Aid at Work training qualification
- ✓ Oxygen administration certification
- ✓ Rescue specialty

3.3 Sanitation

a. Exhibits and Back of House Tanks

- Animal and food waste shall be removed from the exhibit or tank at least daily, and more often when necessary, to prevent contamination of the aquatic animals contained therein and to minimize disease hazards.
- Particulate animal and food waste that enter the water shall be removed as often as necessary to maintain the required water quality and to prevent health hazards to the aquatic animals contained therein.
- The wall and bottom surfaces of the exhibit shall be cleaned as often as necessary to maintain proper water quality.

b. Food Preparation Areas and Food Receptacles

Containers such as buckets, tubs and tanks, as well as utensils such as knives and cutting boards, or any other equipment which has been used for holding, thawing or preparing food for aquatic animals, shall be cleaned and sanitized after each feeding if the aquatic animals are fed once a day and at least daily if the aquatic animals are fed more than once a day. Kitchens and other food handling areas where animal food is prepared shall be cleaned at least once daily and sanitized at least once every week. Sanitizing shall be accomplished by washing with hot water (82°C / 180°F or higher) and soap or detergent, or by washing all soiled surfaces with a detergent solution followed by a safe and effective disinfectant, or by cleaning all soiled surfaces with live steam. Substances such as cleansing and sanitizing agents, pesticides and other potentially toxic agents must be stored in properly labeled containers away from food preparation surface areas.

c. Housekeeping

Buildings and grounds, as well as exhibit areas, shall be kept clean and in good repair. Back of house or plant rooms shall not have any loose objects, sharp projections and / or edges that may cause injury or trauma to the aquatic animals contained therein or to staff working in the area.

3.4 Employees

a. Staffing Requirements

Management staff must include a sufficient number of recognized aquatic animal experts to supervise and train both staff and animals. A sufficient number of adequately trained employees or attendants responsible to management shall be utilized to maintain the prescribed level of husbandry practices set forth in this section. Specific staffing requirements are listed in sections on Standards of training programs and Staffing requirements. Such practices shall be conducted under the supervision of an aquatic animal's caretaker who has experience in aquatic animal husbandry and care.

b. Training Programs

The facility must provide and organize a training program for their employees including species appropriate husbandry and handling techniques and information on proper reporting protocols such as record keeping and notification of veterinary staff for medical concerns.

3.5 Record-keeping

a. General

Aquatic animals facilities need to maintain comprehensive and accurate records concerning the humane and healthful care of the aquatic animals in their collection. All facilities must maintain the following records indefinitely for basis for future assessments and reference. The following records such as permits, facility plans etc. will have to be kept in the facility and records must be provided to the EHS upon request and will be archived 10 years and more.

b. Acquisition and Disposition Records

Must include date and location of acquisition; method of acquisition (wild collection, facility birth, transfer, loan, temporary holding); scientific name; date and location of disposition; method of disposition; health profile if known. This should be filed to the records of the facility and cannot be disposed earlier than ten (10) years.

c. Food and Feeding Records

Must include type and / or species of food; inventories; dates on food packets; freezer temperature.

d. Health and Medical Records

Must include date of examination; veterinarian's name; reason for examination; examination conditions; action taken; medications; supplements; individual nutritional requirement; body measurements; necropsy findings; photographs (when appropriate), physical characteristics; diagnosis; frequency of veterinarian visits if part-time or consulting.

e. Water Quality Records

Must include test parameters for water quality; tests for added chemicals; amount of added chemicals; facility maintenance log; filtration operation log.

f. Life Support System Checklists

Must cover all observations of LSS and their functionality. Must record all readings on gauges and meters.

g. Facility Descriptions

Must include enclosure dimensions and location; water system type; emergency protocols (pre, during and post emergency).

h. Training Logs

Must record all elements of staff training

i. Dive Logs

Must record all dives with depth, time, task completed. No decompression dives are allowed and dive activities must be terminated before reaching saturation levels.

3.6 Safety of Records

- a. Protection – records must be reasonably protected from fire, flooding and other natural or human created hazards.
- b. Document Retention Program – must be implemented, detailing which documents are required and how long each document must be kept.

3.7 Veterinary Care

- a. The veterinary surgeon should be familiar with current practice regarding veterinary care of fish, especially the species with which he or she is expected to deal. He or she should be responsible for, or actively involved in, the following:
 - routine visits
 - staff training in disease recognition and basic lab techniques
 - directing or carrying out treatment of sick animals
 - preparing a set of treatment protocols for aquarium tanks

b. Newly Acquired Aquatic Animals

Should be quarantined and shall be isolated from resident Aquatic animals until such newly acquired aquatic animals can be reasonably determined to be in good health. Any communicable disease condition in newly acquired aquatic animals must be remedied before it is placed with other resident aquatic animals.

c. Any exhibit tank containing an aquatic animal with an infectious or contagious disease

May be cleaned and sanitized in the manner prescribed by the attending veterinarian. No additional animals shall be introduced into the exhibit prior to such cleaning and sanitizing procedures. Any aquatic animals exposed to a diseased animal shall be isolated unless the whole tank will be treated, whatever is applicable, and be subjected for observation for an appropriate period of time as determined by the attending veterinarian or fish specialist.

d. Temporary Holding Facilities

Facilities with adequately and properly designed tanks shall be provided for isolation, medication, treatment and other purposes such as transfer of aquatic animals. The tanks may be less than minimum size in both lateral dimensions and depth when used in special situations when prescribed by the professional staff for temporary usage.

e. Necropsy

A complete necropsy should be conducted by or under the direct supervision of a veterinarian or fish specialist on any aquatic animals that die in captivity. A necropsy report must be prepared by the veterinarian or fish specialist listing all pathologic lesions observed and giving the apparent cause of death. All diagnostic tests conducted on post mortem specimens shall be listed in the report and the results of each test recorded. The management of the facility, at which the aquatic animals died, must maintain these necropsy records for a minimum period of three (3) years and present them to inspectors when requested.

3.8 Quarantine

a. General Provisions

All facilities must have a quarantine and isolation program approved by EHS for all new animal arrivals at the institution. A facility should be available which can provide for the quarantine of newly acquired aquatic animals in such a manner as to prohibit cross contamination between animals. Ocean enclosures used for quarantine purposes must be located in a way that prevents the spread of any disease, from animal to animal, through natural water movement and at a distance from other enclosures deemed adequate by the attending veterinarian or fish specialist. If a receiving institution does not have appropriate quarantine facilities, they should arrange for quarantine at an alternate site or only receive animals that do not require quarantine.

b. Conditions requiring use of quarantine

Quarantine practices must be instituted based on the prior medical history of the newly arrived animal. Those situations where quarantine is recommended must have one or more of the following characteristics: recently collected from the wild (less than 30 days prior to transport); recently exposed to a new arrival (less than 30 days prior to transport); poorly documented medical history; apparent medical problems at the time of arrival; at the direction of the attending veterinarian or fish specialist. Should disease symptoms develop for any animal during shipment from, or before the end of, the 30 day quarantine period or as prescribed by a qualified specialist. A full quarantine report must be submitted to EHS within 72 hours of the first documentation of these symptoms or as required.

c. Standards and Guidelines for Quarantine

- Quarantine for all species must be under the supervision of a veterinarian or fish specialist and consist of a minimum of 14 days unless otherwise directed by the attending veterinarian or fish specialist. If during the 14-day quarantine period, additional aquatic animals are introduced into the quarantine facility, the 14-day period must begin again for all animals already in quarantine and exposed to the new arrivals. Skin scrapes, fecal examination and gill sections can be used to determine that the animal is clean and healthy prior to achieving the 14-day period. In such cases where the examination is negative, the 14-day period can be waived.
- Attendants should be designated to care only for quarantined animals or to attend quarantined animals only after fulfilling their responsibilities for the resident species.
- Equipment used to feed and clean animals in quarantine shall not be used with non-quarantined animals unless thoroughly cleaned and disinfected.
- Institutions must take precautions to minimize the risk of exposure of animal personnel to zoonotic diseases that may be present in newly acquired animals if the attending veterinarian deems that zoonotic risk exists. These precautions should include the use of disinfectant footbaths, wearing of appropriate protective clothing and minimizing physical contact.
- An examination as defined by the attending veterinarian or fish specialist must be performed during the entrance into, and prior to exit from, quarantine. During this period, certain prophylactic measures should be instituted.
- Complete medical records, including necropsy reports as required, should be kept for all quarantined animals.

4.0 Display and Interaction Standards

4.1 Education Programs

a. Purpose

Education is an integral and important component of the overall operations in every facility that houses aquatic animals. Public display facilities are the primary source of educational programming about aquatic animals for the public. Any operating facility should incorporate a comprehensive education program to accomplish the purpose of educating a broader member of the society in terms of increasing awareness about marine life.

b. General Provisions

Education is the dynamic process of becoming aware, gaining knowledge, expanding understanding, constructing meaning and developing the skills to actively use what has been learned. Education about aquatic animals encompasses such things as displays, presentations, shows and a wide variety of other educational and recreational programs, all designed to promote the learning process of visitors. The overall goal of educational programming is to enhance appreciation for and understanding of aquatic animals and their ecosystem. An informed public is more likely to support research and conservation of aquatic animals populations and their ocean habitat.

c. Standards and Guidelines for Education

- Education programs about aquatic animals must promote an improved understanding of and an appreciation for these animals and their ecosystems. In addition to direct observation, a variety of other techniques and stimuli may be used to effectively communicate member programs' educational messages. These methods may include, but are not limited to, some or a combination of the following:
 - public shows
 - recreation programs
 - special needs programs (e.g. disabled, senior citizens)
 - species identification labels
 - teacher training
 - written material / publications
 - audio-visual materials
 - community outreach
 - formal education programs
 - guided tours
 - instructional guides / curriculum
 - interactive exhibits / programs
 - interpretive graphics
 - narration at exhibits
 - off-site education programs
 - public presentations
- Education programs about aquatic animals must offer multiple levels of learning opportunities for visitors to expand their knowledge about these animals.

- Education programs about aquatic animals must present information about these animals, their ecosystem or marine wildlife conservation that is based upon the best current scientific knowledge. "The best current scientific knowledge" refers to information based on the growing body of scientific research about aquatic animal science including a number of disciplines such as biology, physiology, anatomy, veterinary medicine and animal behavioral science.
- A qualified individual must be designated and responsible for the development of and administration of education programs about marine mammals. "Qualified" refers to having a bachelor's degree in psychology, animal behavior, animal science, marine biology, zoology or other related bachelor's degree (or advanced degree in these same fields), educational experience, administrative skills and broad knowledge about marine mammals.
- Education programs about aquatic animals must include a written education plan consisting of a mission statement, goals and an evaluation strategy.
- Education programs about aquatic animals must include availability of institution experts as a marine science resource.
- Public display facilities must employ and / or collaborate with many highly knowledgeable and experienced marine mammal experts such as animal behaviorists, veterinarians, research scientists, trainers, marine educators and other specialists.

4.2 Animal Husbandry Team

a. General Provisions

Aquatic animals' facilities must recognize animal training as an application of behavioral science that:

- provides a means to observe, assess and enrich an animal's physical and psychological health
 - assists the medical staff in providing safe and expedient methods for preventive and clinical medical procedures
 - integrates public display within husbandry regimes
 - facilitates education and research objectives
- b. The number of staff and their experience and training must be sufficient to ensure compliance with the standards at all times, making due allowance for holidays, sickness and other absences.
- c. A list must be maintained of all staff authorized to work with the animals, together with lines of responsibility and levels of expertise, training, and qualifications.

- d. A suitably competent member of staff must always be available and in charge.
- e. All animal staff must be competent for their individual responsibilities and given the opportunity to undergo formal training to achieve appropriate qualifications.
- f. Continuous in-house staff training must be a regular aspect of the facility.
- g. The facility operator must make every effort to ensure that his/her staff does not have any convictions or a background of the ill-treatment of animals under any other animal welfare or conservation legislation.
- h. Information Exchange – the organization should participate in information exchange activities to enhance their program and contribute to the collective knowledge of the community, thereby advancing the science of animal husbandry and training. Suggested considerations include:
 - Membership of professional organizations
 - Aquarist exchange programs
 - Internships, etc.

4.3 Security

All facilities must provide twenty-four hour security at the aquatic animals' facility.

5.0 References

- BIAZA: British and Irish Association of Zoos & Aquariums
Husbandry, Conservation, Education and Research initiatives in UK Public Aquariums
Compiled by Ross Snipp / Zoo Programmes Coordinator BIAZA 2005
- A Guide to the Exhibition of Animals in New South Wales
13 July 2004 / NSW Department of Primary Industries
- Sea Fisheries (Inshore Trawling, Netting and Dredging) Regulations 2001
Revised Edition / New Jersey
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
Guidance on Fees applicable from 6th April 2009
- Federal Law No. 23 of the Year 1999 on the Exploitation, Protection and Development of the Living Aquatic Resources in the State of the UAE