AZA Safety Example Practices
Disclaimer:

The materials contained herein were developed as examples of practices that may be used to promote and maintain safety and security in zoos and aquariums. These materials are not standards, specifications, or regulations and create no new legal obligations. They do not replace or override any applicable federal, state or local laws, regulations or ordinances. The facility’s safety committee, management and legal staff should review the materials in light of site-specific conditions and requirements.

These materials are advisory in nature, informational in content, and intended to assist facilities in providing a safe and healthful environment. Each facility must review the information taking into account the specifics of its facility. This document may not address all of the safety concerns for a specific facility. It is the responsibility of each facility through the application of technical judgment and experience to determine the appropriate procedures for that facility.

Zoo & Aquarium Safety: Example Practices
EXAMPLE POLICIES AND PROCEDURES
FOR AN EFFECTIVE OCCUPATIONAL HEALTH, EMERGENCY MANAGEMENT, AND SAFETY PROGRAM

A Reference Guide prepared and maintained by the AZA Special Committee on Safety Association of Zoos & Aquariums
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PURPOSE AND ORGANIZATION OF THIS GUIDE

Zoos and aquariums accredited by the Association of Zoos and Aquariums (AZA) are committed to providing a healthy and safe environment for employees, guests, volunteers, and surrounding communities. This is evidenced by AZA accreditation standards, which have a complete section on safety and security (https://www.aza.org/uploadedFiles/Accreditation/AZA-Accreditation-Standards.pdf). Moreover, managing live animals and essential facilities, along with serving the tens of millions of guests who visit AZA-accredited zoos and aquariums each year, is a challenging responsibility. Occupational safety and health (OSH), also commonly referred to as occupational health and safety (OHS) or workplace health and safety (WHS), is an area concerned with the safety, health and welfare of people engaged in work or employment, and OSH, OHS and WHS may be used interchangeably in this document. Zoo and aquarium management efforts include focus on robust health and safety programs that include good Planning, Prevention, Response and Recovery, and related initiatives, including training, practice drills, active monitoring of employee health and safety practices, and motivational tools to inspire employees to actively participate in, and support, high levels of compliance and cooperation for response and recovery in emergency situations.

The staff of every AZA-accredited zoo and aquarium, from the Board of Directors and top management to staff and volunteers, should develop and maintain a culture where accidents and incidents are viewed as avoidable; this belief about safety—when incorporated into all policies, procedures, committee meeting agendas, staff meetings, planning efforts, and budgeting considerations—will encourage staff and volunteers to work safely and to reduce the potential for injuries associated with accidents or incidents. Close attention to proactive health and safety policies, programs, and procedures is an impactful strategy in reducing the frequency of workplace incidents and associated losses, while analysis of past safety incidents at similar institutions can provide indicators of accident rates in certain areas or disciplines (see OSHA’s 2012 “Injury and Illness Prevention White Paper” https://www.osha.gov/dsg/topics/safetyhealth/OSHAwhite-paper-january2012sm.pdf).

This Guide is organized around the four fundamental elements of effective health and safety and emergency management programs: Planning, Prevention, Response, and Recovery. A health and safety program built around these elements builds on the extensive lessons in mitigating risks to personnel and property that have been learned from other professions, including construction, manufacturing, farming, ranching, and government. Where appropriate in this Guide, often in the Appendices, individual AZA accreditation standards are cited in several key places for easy reference. Readers are encouraged to check the latest edition of AZA Accreditation Standards and Related Policies for the most up-to-date language in each standard and explanation.

This Guide is a “living document,” which the AZA Safety Committee will continue to update based on new insights and innovations for modern zoo and aquarium safety practices, and new legal and regulatory requirements. Suggestions, comments, and corrections should be sent to the Chair of the AZA Safety Committee.
LIMITATIONS OF THIS GUIDE

The objective of this Guide is to provide members of the Association of Zoos & Aquariums (AZA) with example occupational health and safety practices. This document outlines some guidelines for current practices. When implementing these safety practices, managers of each facility should take into account individual facility and collection characteristics, as well as local, state and national laws and regulations. Individual facility managers should also take into account locally-available technologies when developing local procedures and protocols; this document uses radios and PA systems as “annunciators” for instance; SMS text alerts, voicemail alerts, email alerts, home phone alerts, etc. may all be available through local emergency management technology structures, and may be desirable additions to local emergency response protocols.

The management practices described in this document reflect the most current practices and procedures known to the AZA Safety Committee at the time of this document’s release, and are meant to encourage responsible and generally-accepted safety protocols and practices in animal husbandry, veterinary care, life support, and other disciplines commonly found in AZA-member zoo and aquariums. As new technologies are developed and advances are made in discipline-specific practices, they should be incorporated into facilities’ plans. This document recognizes that relevant training at all appropriate levels is essential to implementing current safe management practices; therefore, zoo and aquarium leadership should give high priority to ensuring such training is provided.
SECTION ONE: PLANNING

OVERVIEW OF AN EFFECTIVE HEALTH AND SAFETY PROGRAM

The purpose of a Health and Safety Program is to clearly define priorities and objectives of an organization in order to provide a safe and healthy work environment for its employees.

A Health and Safety Program’s primary objectives are:

- An organizational commitment to health and safety
- Communication of organizational goals
- Dedication to creating and maintaining a safe work environment
- Proactively identifying safety hazards and concerns through Planning and Prevention
- Reducing employee injuries through training and mitigation
- Providing health and safety training and drilling for all employees
- Effective Response and Recovery to all accidents and incidents

Through the development of a Health and Safety Program, zoo and aquarium management and safety officers should create a lasting message to cultivate a safer environment for all employees, animals, and visitors. This message should be communicated throughout all aspects of organizational planning including management, planning, decision making, and operations.

There are a number of essential duties for a safety committee that support the purpose of the Health and Safety Program. These include implementation of the following duties (“Planning”, “Prevention”, “Response” and “Recovery” added in parentheses to indicate when in the cycle it is most appropriate to include particular duties):

**Policies and Procedures (Planning)**
- Development of, and adherence to, health and safety policies and procedures
- Mandatory health and safety training requirements

**Safety Committee Responsibilities (Prevention)**
- Promote safety awareness.
- Conduct regular meetings.
- Complete projects, training, and scheduled events to support safety initiatives.
- Conduct inspections and audits.
- Conduct accident investigations.
- Provide research on the products and methods for safe operations.

**Auditing (Prevention)** Inspections and audits can be performed by Operations and the Safety Committee
- Regular third-party audits are performed by many facilities.
- The difference between a “safety audit” and a “safety inspection” can be found at this website: http://www.safe-workplace.com/articles/safety-audit-vs-inspection.php.

**Annual Review (Planning and Prevention)**
- Review the mission statement and Health and Safety Program.
- When necessary, identify deficiencies and evaluate and readjust policies and procedures.
- Recognize successes.
A number of factors have been identified to support the overall success of a Health and Safety Program, and should be implemented throughout the organization. (“Planning”, “Prevention”, “Response” and “Recovery” again added in parentheses to indicate when in the cycle it is most appropriate to include particular duties):

**Role of Management (Planning and Prevention)**
- Make safety a priority.
- Provide leadership on safety issues.
- Provide safety training for employees.
- Review Worker’s Compensation (WC) losses.
- Budget for safety-related supplies and equipment.
- Incorporate safety into planning objectives.

**Documentation (Prevention)**
- Document safety training and drills.
- Prominently display Occupational Safety and Health Administration (OSHA) required postings.
- Maintain OSHA log.
- Document investigations of all accidents.

**Hazard Identification and Control (Prevention)**
- Provide employees with training consistent with the Hazard Communication Standard aligned with the Globally Harmonized System of Classification (both detailed by OSHA), state standards, etc. to fulfill employees’ right to know and to understand workplace hazards.
- Inventory all chemicals at the facility.
- Make certain that Safety Data Sheets (SDSs) are readily available and accessible.
- Store hazardous materials in appropriate storage facilities.
- Provide and maintain personal protective equipment (PPE) and require its use.

**Manual Material Handling (Prevention)**
- Train employees to lift properly.
- Provide safe clearance for equipment through aisles and doorways.
- Provide dollies and lift trucks for frequent heavy loads.
- Reduce load and distances of lift.

**Fire/Evacuations (Planning and Prevention)**
- Train and drill employees in proper evacuation procedures and fire extinguisher handling and use.
- Make certain that all exits are unobstructed, clearly visible, and marked with illuminated signs.
- Inspect fire extinguishers monthly.
- Inspect, test, and maintain all fire protection and life safety systems regularly and as required by local laws (e.g., monthly).
- Perform annual service and tagging of building sprinkler systems.

**General Safety (Prevention and Education)**
- Provide and maintain all necessary personal protective equipment (PPE). Train all appropriate personnel in PPE needs and usage.
- Maintain adequate housekeeping and sanitation.
• Provide all areas with adequate lighting and ventilation.
• Properly store and maintain ladders.
• Post emergency notification procedures, contacts, and phone numbers.
• Maintain tools and equipment in good condition and working order.
• Provide cautionary signage around areas (floors) that are frequently wet.

Underwater Dive Operations for SCUBA OR Surface-supplied air (Planning and Prevention)
• Refer to the “Diving” standards (11.7.1-11.7.4).

Electrical (Prevention)
• Install and maintain GFI circuitry in wet environments (AZA accreditation standard11.3.4); (https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=19269). The National Electrical Code specifies that GFCI outlets must be used in kitchens, bathrooms, outdoor outlets, garages, bar sinks and laundry sinks. What do all those places have in common? As you may have guessed, they all experience regular water use. That can be very dangerous when water comes into contact with electricity. A GFCI outlet shuts off the power automatically in those circumstances, sparing you injury
• Maintain electrical equipment in good condition and good repair.
• Install cover plates on outlets and switches.
• Ground or double-insulate electrical equipment.
• Properly mark breaker switches and maintain breaker boxes closed with no gaps.

Operation of Vehicles (Prevention)
• Require periodic safe driver training
• Establish policies and procedures to disqualify unsafe drivers.
• CDL drivers must meet state and local requirements.

Workplace Violence (Prevention)
• Provide training and awareness for the facility
• Control access to the property.

Drug and Alcohol Policy (Planning and Prevention)
• Develop a policy to address employee screening and follow-up.

Appropriate Insurance Coverage (Planning and Recovery)
• See also Section 4: Recovery
OVERVIEW OF SAFE WORKING PRACTICES

Safe Working Practices: Roles of Leadership, Management, and Employees

Leadership
Leaders must be the driving force for effective application of safety practices within the organization. They should provide leadership and direction in the administration of all safety activities relating to guest, employee, and animal safety.

Management
The role of managers in all aspects of safety is of vital importance. Managers are the front line of a good safety program with day-to-day knowledge of what is being done, who is doing it, how the job is done, and under what conditions it is being done.

Employees
Every employee is responsible for their own health safety, as well as the safety of their fellow employees and the animals in their care. Each employee is responsible for complying with all company safety policies and procedures, local, state, and federal regulatory standards, and all rules and regulations that apply to their own actions and conduct on the job.

Safe Working Practices: Role of a Safety Committee

Every zoo and aquarium should have a Safety Committee or safety team. Full communication between employees and the Safety group—and the Safety group and Executive Leadership Team—is crucial for the success of the Safety group. The primary objectives of a Safety Committee/safety team include:

- Providing a mechanism to assist in the oversight and implementation of safety processes and safety awareness
- Continuously improving safety and health through regular review of various processes and proactive identification of safety concerns
- Communicating and assisting with resolution of safety and health issues
- Serving as a communication vessel between the Safety Committee and all area employees
- Communicating relevant safety topics

The following list includes the key components of a safety committee:

- Chairperson(s): An executive or senior Leader should chair the committee, or be a liaison to the Safety Committee’s officers.
- Membership: Member terms should be at least 1 year or longer. Membership should consist of at least one person from each individual area/department, and should be staggered so that a majority of the committee members’ terms do not end at once.
- Meeting Frequency: The committee should meet at least once per month, or adjusted as the committee sees fit.
Meeting Documentation: Notes should be taken at each meeting and be made available to all area employees. Notes may be posted on safety bulletin boards, communicated through pre-shift meetings, and via electronic distribution such as e-mail or a facility intranet. The notes should describe any safety concerns that are brought up, and the resolution of the concern.

Reporting activities to institutional leadership team: The Safety Steering Committee should report the activities of the committee to an executive team, at least quarterly.

Safe Working Practices: Role of an Incident Management System

An organization’s ability to respond to or overcome emergency or crisis situations is directly related to the existence of a well-organized Incident Management System. The Federal Emergency Management Agency (FEMA) runs the Emergency Management Institute (EMI), which replaced its Incident Command System (ICS) curricula with courses that meet the requirements specified in the National Incident Management System (NIMS), and were developed in collaboration with US Department of Agriculture and others. The course listing can be found on this FEMA weblink: [http://training.fema.gov/is/nims.aspx](http://training.fema.gov/is/nims.aspx)

The Department of Homeland Security recommends the following for safety preparedness in US zoos and aquariums (from the DHS Commercial Facilities Sector Specific Plan which is an annex to the National Infrastructure Protection Plan). **This is a mission statement for the commercial facilities sector:**

**Mission Statement for the Commercial Facilities Sector**

*The Commercial Facilities Sector envisions a secure, resilient, and profitable sector in which effective and non-obstructive risk management programs instill a positive sense of safety and security in the public and sustain favorable business environments that are conducive to attracting and retaining employees, tenants, and customers.*

The **Public Assembly Subsector** represents the owners and operators of convention centers, auditoriums, stadiums, arenas, movie theaters, cultural properties, and other assets where large numbers of people congregate. Cultural properties are a very large and very diverse segment of the Public Assembly Subsector. Cultural properties include, but are not limited to, museums, zoos, planetariums, aquariums, libraries, and performance venues. Formation of a separate, ninth subsector for cultural properties is under consideration by the SCC. This subsector has close business ties with the Lodging, Outdoor Events, Real Estate, Gaming Facilities, and Sports Leagues subsectors. ([http://www.dhs.gov/commercial-facilities-sector](http://www.dhs.gov/commercial-facilities-sector))

Zoos and aquariums of all sizes can benefit from the resources provided through FEMA’s National Incident Management System listed above. An Incident Management System should be specifically adapted to fit the size, conditions, and nature of each organization individually.

FEMA’s National Incident Management System assists organizations by providing information on developing a standardized approach to incident management that is scalable and flexible, recommending techniques for enhanced cooperation between responders, displaying comprehensive coverage of all-hazards preparedness, and portraying best practices procedures for emergency response.
Incident Management System resources are available on FEMA’s website: http://www.fema.gov/national-incident-management-system

For further information and a complete overview of emergency preparedness and incident management, please refer to FEMA’s NIMS guide: http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf and the Zoo Animal Health Network at http://www.zooanimalhealthnetwork.org/
SECTION TWO: PREVENTION

SAFE WORK PRACTICES: ZOO AND AQUARIUM SAFETY INSPECTIONS AND AUDITS

The goal of safety inspections is to establish a process to proactively identify safety issues, develop and implement corrective actions, and track those actions through completion.

These tools and techniques provide a system of checks and balances that promotes the continuous improvement in the overall performance of an organization’s safety, health, and environmental management programs.

In order for this process to succeed, assigned responsibility and accountability should be in place for each step. This process will also provide a procedure for supervisors and employees to immediately report observed unsafe conditions to the designated safety coordinator and take immediate corrective action to the extent of their abilities/resources.

Inspections and audits should be performed on a regular basis as set by the facility. The following link defines audits and inspections: [http://www.safe-workplace.com/articles/safety-audit-vs-inspection.php](http://www.safe-workplace.com/articles/safety-audit-vs-inspection.php)

Safety Committee

Safety inspections and audits can be accomplished through a Safety Committee as defined in this document. Safety committees should establish a schedule to make certain that all areas of their zoo or aquarium are inspected on a regular basis.

The safety inspection checklists in Appendix 3 of this document can serve as a starting point for developing a more specific checklist suited to each individual facility.

Safety Committee members should determine specific areas, workplace locations, and/or specific disciplines for which they are the primary contact. For example, a committee member with expertise in electrical safety, fire safety, or hazardous materials can be responsible for that discipline throughout the entire facility.

The Safety Committee should develop inspection reports to be reviewed by the safety coordinator. These reports should include the following elements: date, area, hazards identified, corrective actions initiated or completed, and the signatures of both the responsible (area) supervisor and the inspector.

Safe Work Practices: Mitigating Health and Safety Risks

Occupational ill-health is preventable, and zoo and aquarium professionals who reduce ill-health among employees also reduce operating costs. Long-term absences due to illness have a devastating effect on the productivity of business as well as the well-being and employment prospects of workers.
Health problems, unlike the immediate effects of an injury, can develop unnoticed over time. Knowledge and awareness of potential hazards can reduce the likelihood of work-related ill-health. Occupational health problems in zoos and aquariums can be caused by any one or more of the following:

- Exposure to harmful substances
- Inhalation of harmful particles
- Poor working practices, such as excessive or inappropriate manual handling
- Environmental factors, such as excess noise, poor light, or cramped work-spaces
- Diseases transmitted by animals (“Zoonotic diseases”)

An effective health management system is recommended so that that illness-related absence is recorded and appropriate action is taken to help and support employees, both at work and in returning to work. This can benefit both employers and employees in the following ways:

- Reduced costs
- Maintenance of productivity, improved productivity, or meeting performance targets
- Reduced need for temp-agency workers
- Reduced recruitment and training costs
- Enhanced organizational reputation
- Improved workplace relations
- Managing daily demands on those at work

Effective management of illness-related absence followed by rapid return-to-work allows managers to more easily identify causes of ill health in their workforce and to focus their attention on proactive risk assessments and increased implementation of preventative controls. Policies aimed at improving employees’ health and safety also promote attendance, reduce time lost from individual instances of ill health, and support employees during their return to work when necessary.

Occupational health professionals can help employers with the identification and implementation of reasonable adjustments for disabled employees either returning to—or remaining at—work.

**Safe Work Practices: Health and Safety Training**

Proper employee training promotes the overall health and safety at a zoo or aquarium, so zoos and aquariums should develop training programs (See AZA accreditation standards 1.5.12, 1.6.1, 7.5, 10.2.1, 11.1.1, 11.1.2, 11.2.1, 11.2.2, 11.2.3, 11.2.5, 11.5.2, 11.6.3, 11.7.4, etc.). These programs should provide employees with information and training regarding the nature and hazards of their occupations, proactive protective measures, and emergency response procedures.

Employees may undergo different training depending on their specific occupations. Training standards and methods will include, but are not limited to:

- Occupational Health and Safety Standards (AZA accreditation standard 11.1.1)
  - OSHA or (State OSHA) training
  - Compliance training regulated on a local, state or Federal basis
- The organization’s on-site specific training. Note: the organization may adopt local standards, for instance:
Adhering to company policies regarding drugs and alcohol testing
Vehicle safety
Emergency preparedness
Third-party training
Standards of performance, employee knowledge, and training
Off-site & on-site training (OSHA, NIMS, ICS, Insurance carrier or WC provider, etc.)

- Multiple training methods
  - Classroom setting
  - Hands on event or “tabletop”
  - Drills (e.g., AZA specific) and exercises
  - Documented exams/quizzes
  - Computer based training
  - Webinars

- Multiple exercise types—adhering to Incident Command System protocol
  - Internal training—internal employees and volunteers, possibly through third-party vendors (onsite vendors)
  - Internal & external training—internal employees and emergency responders (fire, police, SWAT, etc.)

- Schedule for safety exercises
  - AZA-required drills—confirm that all required drills have been completed and documented. This schedule should be the minimum local requirement (at least four unique drills required per year, per AZA accreditation standard 11.2.5, 11.5.2, etc.).

- Documentation for training, exercises, and tests (e.g. AZA accreditation standard 11.2.5)
  - Document and track progress of training, drills, tests, and exercises to determine areas of success or need for improvement. For example, ask employees to sign-in to training programs to document attendance. Keep this documentation for at least 5 years for AZA accreditation purposes.
  - Provide reviews from multiple points of view, including other participant observations

Safe Work Practices: Developing General Safety Guidelines

All zoos and aquariums should develop a general set of Safety Guidelines (See AZA accreditation standard 11.4).

All zoo and aquarium employees are expected to perform their jobs to the best of their ability and in a safe manner. It is critical that employees do not circumvent safety features or safe work behaviors, as this may expose them or others to otherwise-avoidable risk. Many accidents are preventable, and all employees should carry out their own safety responsibilities. Everyone shares a common goal for a healthy and safe professional working environment, and this should be the expectation of each person working within a zoo or aquarium. A zoo/aquarium’s safety guidelines should include the following goals:

- **Protect** the health and well-being of staff, visitors, and animals.
- **Be aware** of one’s environment.
- **Perform** tasks in the correct and prescribed manner.
- **Protect** people, animals, and equipment from work hazards.
- **Apply** common sense to the work routine.
- **Follow** guidelines to avoid dangerous situations.
The following are guidelines to help avoid injury. This list is not all-inclusive. Employees are expected to practice them regularly and commit them to habit. (See AZA Accreditation Standards and Related Policies, section 11).

- All employees should be expected to participate in promoting workplace safety by attending appropriate training and meetings or submitting good suggestions for improvement. A mechanism should be established for receiving employee comments, concerns, and suggestions, both anonymously and through the chain-of-command.
- Employees should follow safe job procedures as established by their supervisor and documented in writing. They should only perform those jobs to which they have been assigned and properly instructed; supervisors should have records of such instruction, and of basic employee competencies.
- All staff members are expected to practice good, safe work habits and follow all safety mandates, zoo or aquarium rules and regulations.
- Employees should wear and maintain appropriate safety equipment (PPE) as required for specified tasks.
- Protective equipment should be kept clean and in good repair.
- Good housekeeping should be practiced in all areas to avoid clutter and other potential workplace hazards.
- All injuries and incidents should be reported to a supervisor immediately, and first aid should be called as soon as possible when injuries demand prompt attention. Employees should be trained as First Responders, in order to administer first aid. Security/Base/Dispatch personnel, if available, should be contacted in all cases where assistance is needed from the zoo/aquarium’s CPR-trained first aid responders or from outside agencies, to enlist their assistance.
- Internal Security/Base/Dispatch, or an external cooperating organization, should be expected to assist with any incident investigation.
- Machines should never be left unattended while running unless they are set up on a continuous mode (such as computerized machines). All machines should be operated in a manner to prevent unauthorized access.
- Equipment should be checked routinely to confirm that the necessary safety features are in place and in good working order. Equipment should be maintained in good condition with all safety features in place when in operation. Any damaged equipment should be reported immediately for replacement or repair.
- Employees should never operate equipment for which they have not been trained or authorized. Any employee with questions about the safe operation of a machine must contact their supervisor immediately. Under no circumstances should machines be used in an unsafe manner or with safety features missing, malfunctioning, or circumvented.
- Machine guards, installed over the point of operation, power transmission, or moving parts, should never be adjusted or removed, except by personnel authorized to make adjustments or repairs.
- Mechanical safeguards should be in position during the operation of any equipment. Equipment should be in the “off” position when removing materials and jams, or performing minor maintenance or adjustments. Idle machines should be rendered unusable by locking or disconnection, if applicable.
• Air pressurized hoses should not be used for personal cleaning or cooling, as serious injury can result from using pressurized air.
• All fire exits, protective equipment, and suppression equipment must be kept clear of obstructions, supplies, equipment, etc.
• Flammable or combustible solvents must never be stored in open, unlabeled containers. All flammable materials should be stored in UL listed or FM approved safety containers with appropriate grounding and bonding to avoid the buildup of static electricity during dispensing.
• Employees should not ride on any material-handling equipment without the appropriate safety cage or structural equipment intended for that use.
• Particular care should be taken when working in public areas during zoo/aquarium operation hours. Pathways should be maintained and trip hazards properly addressed; at the same time, employees should pay attention to the health and safety of nearby visitors.

There is a more extensive list of potential safety preparedness guidelines here:

Safe Work Practices: Fire and General Safety

Fire safety is an important concern of zoos and aquariums (AZA accreditation standards 10.2.2, 11.2.2, 11.2.5). In most zoo and aquarium environments, the animals are confined within their space and may not be able to escape from exposure to smoke or fire. The intent of a fire safety inspection is to identify and minimize fire risks through actions such as limiting combustible materials, identifying and following proper storage methods, and in some cases developing alternate methods for certain work such as welding.

The sample fire safety inspection checklist in Appendix 8 of this document can be used as a starting point for developing a more specific checklist suited for each individual facility.

Inspections and audits should be performed regularly on a facility-specific schedule. The audit process is different from an inspection, should include collaborative outside reviewers and a procedure for reporting the audit results to management, as well as a time table for responding to any issues found during the audit.

Fire inspections should be part of the overall safety inspection process.

Safe Work Practices: Managing Toxic and Hazardous Substances and Waste

Certain types of waste contain properties that make them potentially harmful to human health and the environment. AZA accreditation standards that relate to this are in section 11. Potentially hazardous and regulated wastes can be liquids, solids, contained gases, or sludge. They can be the by-products of a production or testing process, or simply discarded commercial cleaning products. To determine if a waste is regulated, contact the appropriate state and local jurisdictions in charge of environmental management in your region.
Each facility should designate a hazardous waste coordinator and develop a hazardous waste management plan that identifies applicable federal, state, and/or local regulations and provides a plan for meeting these regulatory requirements. Reports and recordkeeping requirements may vary by jurisdiction. Consult state and local regulatory agencies for the reporting and recordkeeping requirements. (See Appendix 5 for more detailed information on a program for hazardous substances and waste)

Safe Work Practices: Personal Safety

All employees should be aware of their surroundings at all times. This includes when traveling to and from work, so may require generalized training.

Keepers and aquarists, and other employees, should be knowledgeable of all risks inherent in working with and around wild animals in captivity. Proper hygiene should be maintained at all times. Keepers and aquarists, and other employees, should frequently wash hands, and know the proper husbandry of animals as well as potential for zoonotic diseases. Safe Feeding and Cleaning Procedures should be followed.

Safe Work Practices: Animal Safety

Keepers and aquarists should be trained in safe and proper animal husbandry, handling, crating, transferring, and transporting techniques (See AZA accreditation standards 1.5.11, 1.5.12, 1.6.1, 1.6.2, 7.3, 7.5, 7.10, 10.2.1, 11.1.2, 11.2.5, etc.). Inspections of enclosures (yards, pools, and off-exhibit holding units) should be conducted to identify any unsafe conditions prior to each shift. Keepers and aquarists should be skilled in working with animals, and in proper animal introduction techniques. Animals must be provided with proper food, water, shelter, and social groups. Keepers and aquarists must be aware of any zoonotic disease potential (AZA accreditation standard 11.1.2), in order to provide best possible protection for the living animal population. All exhibits should be maintained in a neat and clean order.

Safe Work Practices: Hazard Prevention and Control

Steps for Hazard Prevention and Control

Hazard prevention and control includes applying appropriate safety controls, employing preventative maintenance for facilities and equipment, ensuring emergency preparedness, and maintaining an effective medical program for employees. It is recommended that each zoo or aquarium have comprehensive measures in place regarding hazard prevention and control (See AZA accreditation standard section 11, etc.).

Control Guidelines

Appropriate control measures include instituting procedures for safe work that are understood and followed by affected employees, enforcing all established protocols, providing personal protective equipment (PPE) and other safety equipment, and correcting unsafe work performance.
Preventative Maintenance
Zoo and aquarium employees are responsible for making sure that all equipment and facilities are in good working order and free of hazards. The department in charge of facilities maintenance should institute a system to automatically generate preventative maintenance work orders at appropriate intervals for the routine maintenance of facilities and equipment.

Medical Program for Employees
Every zoo and aquarium should encourage its employees to play a role in their own healthcare and well-being so that they can effectively perform their jobs. Therefore, it is recommended that zoos and aquariums provide seminars and material on wellness issues—such as stress management, nutrition, healthy exercise, healthy choices, and smoking cessation—which will be made available to employees. A physician and emergency services should be located nearby.

Employee Vaccination Program
To help protect against particular infectious and zoonotic diseases, approved testing and vaccinations should be considered based on job roles. Some considerations follow (note that local requirements/needs may differ):

- Rabies vaccine and titers—for Veterinary, Carnivore, Bird, Mammal, and other appropriate departments
- TB testing—required annually for appropriate zoo animal care staff, and at the discretion of individual aquariums (AZA accreditation standard 11.1.3). This includes any employee participating in keeper/aquarist job shadowing, and should be mandatory for Veterinary, Primate, and Children’s Zoo departments (if applicable).
- Hepatitis A—for Veterinary, Water Quality, Janitorial Plumbing, Maintenance, and Primate departments
- Hepatitis B—for Veterinary, Water Quality, Janitorial, Plumbing, Maintenance, and Primate departments
- Tetanus—for Animal Care, Grounds, Horticulture, Janitorial, Facilities, and First Aid staff
- Flu shots—should be for all staff whose jobs require them to handle collection birds. A good practice to protect the health of all employees is for all appropriate employees and volunteers to receive annual flu shots. (Specific influenza vaccinations may also be recommended by national, state or local veterinary health authorities for appropriate collection species).


Emergency planning and training exercises are a part of every effective occupational Health and Safety Program. Zoos and aquariums should have comprehensive emergency and safety procedures in place and develop a schedule for training, live-action, and tabletop drills to prepare employees for a variety of situations in the safest way possible (AZA accreditation standard section 11.2, etc.).

All employees should be familiar with warning signs of heat stress and heat stroke, and should report if they, a co-worker, or guest is demonstrating such signs. Providing training for those employees who work outdoors is highly recommended. OSHA has information available at https://www.osha.gov/SLTC/heatstress/index.html

A good practice is for the zoo’s safety officer to transmit annual updates on weather risks at appropriate times (for instance, a reminder about heat stress risk at the beginning of summer or during “extreme summer heat events”).

Safe Work Practices: Encouraging Employee General Health and Safety

General Principles

Zoos and aquariums should recognize general health and safety principles in order to encourage the highest quality of health and safety throughout the organization.

All employees within a zoo or aquarium should perform their jobs to the best of their ability in a safe manner. Employees should abide by safety guidelines and principles. Each team member should carry out their own safety responsibility and remember that they are also responsible for the safety of zoo and aquarium visitors and animals. When safety is shared as a common goal, everyone can work together to promote it.

The following is a sampling of common risks within zoos and aquariums, including potential conditions that employees may encounter while working within a zoo or aquarium, that may lead to injury or illness, and recommended preventative or control measures.

Manual Handling and Lifting

Manual handling is moving an object (load) using one’s body and includes supporting, lifting, lowering, pushing, pulling, and throwing. Performing manual handling tasks correctly and appropriately can prevent undesirable results, including disorders of the muscles, joints, and bones, known as musculoskeletal disorders. Some of these conditions can be short term, while others can result in long-term issues.

Vibration

Many pieces of equipment have the potential to transmit vibration to the operator, either by poor design, poor maintenance, or incorrect use. Repeated exposure to equipment vibration can lead to long-term health problems. Likely sources are:

- Chainsaws
- Hammer drills
- Trimmers and brush cutters
- Regular use of tractors or small transport vehicles, particularly off-road

Other examples involve workers using powered hand-held tools regularly or for long periods of time, or performing other work, which exposes them to vibration through their hands and arms.
Workers who operate or drive off-road machinery may be exposed to high levels of whole body vibration (WBV).

Assessment should include the following:

- The suitable selection of tools and equipment for the work to be done, taking into account the level of vibration produced.
- Alternative work methods to eliminate exposure to vibration, such as:
  - Introduction of auxiliary equipment
  - Limitations on the time of tool use
  - Appropriate work schedules to reduce individual employee exposures
- Maintenance of equipment
- The provision of information, instruction, and training on the use and limitations of equipment and steps to minimize vibration exposure
- The provision of clothing, etc. to protect employees from vibration, as well as cold and damp

**Legionella**

Legionnaires’ disease is covered here separately from other diseases because zoo and aquarium premises are likely to have a number of water systems, and water systems are known to be the source of this disease. Legionnaires’ disease is a potentially fatal form of pneumonia caused by inhaling small droplets of water contaminated with the legionella bacteria. These may be found in increased numbers in water stored between 68°F and 140°F, and wherever there is a source of nutrients for the bacteria (e.g., rust, scale). Potential sites/sources include:

- Cooling towers for air conditioning
- Hot and cold water tanks and systems
- Tropical houses
- Showers
- Humidifier systems
- Some sprinkler systems (especially where long runs of pipework are exposed to heating)
- Water systems used intermittently, as well as redundant parts of systems, are particularly hazardous.

It is important to identify and assess each source of risk and take action to minimize the risk of infection on a site specific basis. Multiple preventative and control measures should be considered:

- Store water above 140°F or below 68°F.
- Insulate runs of pipework supplying equipment, which might produce aerosols.
- Dismantle redundant pipework, tanks, and fittings.
- Exercise care when cleaning out pools and moats, particularly when using a pressure hose.
- Flush, clean, and disinfect on a routine schedule.
- Sample susceptible areas to monitor for any build-up.
- Assign an authorized and trained person to manage the legionella risks.
**Ultraviolet Radiation**

Zoo and aquarium workers can potentially be exposed to high levels of ultraviolet (UV) radiation, either outside in the sun, or inside where UV radiation may be used for disinfection of aquatic systems. Outdoor workers should be particularly careful, as excessive exposure of the skin to UV radiation in sunlight can lead to sunburn and, in the longer term, increase the risk of developing skin cancer. Outdoor workers should therefore be advised not to shed clothing while working outdoors, especially in the summer between the hours of 11am and 3pm. Protective clothing (i.e., hat and long sleeves, protective sunglasses) is advisable when weather forecasts indicate a high risk of sunburn. The use of sunscreen products should be considered.

In some parts of aquariums (e.g., aquaria, vivarium, or experimental ecology chambers) special environmental conditions may require the provision of solar simulation lamps or germicidal UV lamps. Staff members should refer to the manufacturer’s guidelines and assess any risks that these special lamps could present to employee safety or health. It should not normally be necessary for employees to work in close proximity to the lamps or enter the area while the lamps are operating.

**Ionizing Radiation**

In zoos and aquariums, exposure to ionizing radiation is only possible where X-ray equipment is used or certain forms of veterinary medicine are practiced. Some fire alarm systems may also contain components that emit low-level radiation.

By law, only appropriately qualified staff may be in control of activities involving sources of radiation, and controls will need to be in place to make certain that staff members are aware of these sources to prevent inadvertent exposure. All employees working with X-Ray and other radiation must be properly trained and supervised.

Approved signs should be prominently displayed to warn of sources of potential radiation. Sources should be kept secure to prevent unauthorized access.

**Respiratory Sensitizers**

Respiratory sensitizers are substances that, when inhaled, cause a reaction or allergy. They are often only harmful to specific individuals, resulting in asthma with symptoms such as:

- Coughing and sneezing
- Wheezing and tightness of the chest
- Stuffy nose (rhinitis)
- Sore, prickly eyes (conjunctivitis)

Respiratory sensitizers may be found in work activities or substances including:

- Dust, feathers, or fur from animals
- Dry fecal matter
- Animal feed-stuffs and bedding
- Wood dust
- Paints and other aerosols
- Powdered natural latex gloves
The potential for harmful effects from these substances should be considered as part of the risk assessment. Any time an employee is suspected of becoming sensitized by a substance they are exposed to at work, steps should be taken to prevent further exposure until a further assessment is carried out and further control measures have been identified.

**Biocides and Pesticides**

Biocides and pesticides are used in zoos and aquariums for a number of purposes including:

- Control of rodents
- Control of weeds
- Environmental control of parasites
- Control of unwanted micro-organisms by disinfection
- Control of algae

In selecting such products for use, it is important that the product selected be the appropriate choice to address the specific pest. Relevant Safety Data Sheets (SDS) should be collected from the supplier and must be available for review by employees (AZA accreditation standard section 11.1.5).

Products must only be used for the site and uses for which they are labeled.

Staff using these products should be properly trained and equipped, and should follow manufacturers’ instructions closely. Pest control staff should be licensed as appropriate in local and state laws and regulations.

**Noise**

Noise in zoos and aquariums can become a source of ill-health, and may originate from sources including:

- Traffic movement
- The operation of a mechanical plant
- Use of work equipment
- The animals at the zoo/aquarium
- Large numbers of visitors
- Music provided in hospitality areas

While there are ways of quantifying noise, as a simple rule, if a person has difficulty hearing someone clearly at six feet or less without them shouting, they may have a situation that needs assessment and controls.

Workers should be protected from loud noise, and a full noise assessment may be recommended. Health surveillance should include hearing tests for employees where there is prolonged exposure to high noise levels. However, steps should be taken to reduce noise levels and noise exposure wherever possible. While PPE such as earplugs may be appropriate in some circumstances, in others, such as working in animal enclosures with animals present, they may introduce other more serious risks.
General Safety around Animal Habitats and Support Systems

If a non-animal staff-member is required to perform certain maintenance or repairs on equipment or habitats, the following guidelines should be encouraged:

- Employees should never enter an animal area unless prior approval by zoo/aquarium management or an animal care staff member has been granted.
- Employee and animal safety is of the utmost importance during any maintenance or repair work performed in or around any animal habitats or support areas.
- Employees should be encouraged to talk to management if at any time they have questions or concerns regarding entering any animal habitats or support areas.
- Zoos and aquariums are encouraged to develop appropriate safety-lockout procedures and engineering controls.

Maintenance and Repairs

Non-animal staff required to work in or around animal exhibits or support areas should be aware of, and perform according to, the following:

- Animals and keepers/aquarists have priority at all times.
- Communicate with the keeper/aquarist that you need to perform work in the area.
- When possible, schedule all work in advance with keepers/aquarists.
- Do not interact with, touch, feed, or signal any animals.
- Prior to entering animal areas, non-animal staff may be required to remove pens, radios, hats, sunglasses, name tags, etc.
- Tools and other items may be required to be kept on a lanyard or other secure control.
- If an article falls into an animal area or tank at any time, STOP and inform a keeper or aquarist immediately.
- Once the maintenance or repairs are completed:
  - Make sure that all tools and materials are accounted for and removed from the venue.
  - Make sure that the work site is clean and in good repair.

Communicate with keepers/aquarists that the maintenance or repairs are completed and that you will be leaving the area.

Safety around Life Support Systems

In order to provide for an appropriate level of water quality and life support (LSS), a system of filters, pumps, disinfecting and other chemical systems, and other related equipment is most likely used. Use of ozone disinfection is a special safety concern. Monitoring selected water quality parameters provides confirmation of the correct operation of filtration and disinfection of the water supply available for the collection. Additionally, high quality water enhances animal health programs instituted for aquatic collections.

The organization should create and enforce safety training, protocols, use of personal protective equipment and operational parameters for this LSS equipment, and also seek out safety guidelines from equipment manufacturers or equipment experts. Other AZA facilities and local water treatment facilities may be a source or reference on safety procedures for water treatment systems and LSS.
Zoos and aquariums may use various chemicals to maintain their habitats. Please see Appendix 5a for some examples.

**Workplace Violence**

Violence in the workplace can be a serious matter, which can be caused by a current or former employee, an acquaintance of a current or former employee, or others. Staff should alert their Human Resources department if they believe an employee or coworker exhibits potentially violent behavior. Facilities can find assistance with developing a program on workplace violence from OSHA, NIOSH, and other agencies.

**Safe Work Practices: Safely Working around Animals**

**Disease Prevention and Awareness in Employees and Animals**

Animals have the potential to transmit diseases to humans. These diseases are known as “zoonoses.” Even when animals appear disease-free, their health status should be established by regular veterinary examinations to identify latent infections or carriers (i.e., animals showing no symptoms). In the normal course of their work, keepers, aquarists, and other employees may be exposed to a variety of potential zoonotic diseases (AZA accreditation standards 2.4.2, 11.1.2).

Visitors to zoos and aquariums can also be exposed to zoonoses, particularly if they feed or handle certain animals. Children and the elderly are especially vulnerable. For general purposes, handwash stations should be provided wherever visitors can touch animals. Zoo and aquarium operators are advised to take special precautions to reduce the risk of visitors being infected in all circumstances, including the isolation of sick or suspect animals. See [http://www.aazv.org/?181](http://www.aazv.org/?181), the “AZA GUIDELINES FOR ANIMAL CONTACT WITH THE GENERAL PUBLIC” from AZA’s Animal Health Committee, and AZA accreditation standard 11.1.2.

Illnesses contracted in the workplace are subject to various reporting and record-keeping requirements under OSHA and local public health laws. Exposure to certain biological agents must be reported. Facilities should designate one or more individuals to be responsible for these reporting requirements in the case of illnesses, such as the following:

- Anthrax
- Brucellosis
- Avian and ovine chlamydirosis (psittacosis)
- Leptospirosis
- Rabies
- Tuberculosis
- Any other infection reliably attributable to work with animals or any potentially infected animal material

Assessments of work with animals should take account the uncertainties relating to the presence of infectious agents in the animals concerned. Risk of infection may come from animal tissue, aquarium or drinking water, feces, body fluids, bedding, etc. Each possible source should be addressed in the assessment. The assessment should consider:
• The biological agent that may be present, what form it takes, what diseases it may cause, and how it is transmitted
• The likelihood of exposure and consequent disease, including the identification of workers who may be particularly susceptible (e.g., pregnant women and individuals whose immune systems are compromised)
• What control measures (e.g. pre-disinfecting, PPE) can be applied
• The provision of information to employees and the use of medical contact cards
• The need for monitoring procedures including health surveillance

Common Zoonoses

Appendix 2 lists several examples of some of the more common zoonoses that may be encountered. Included in the table are brief notes on the likely source of infection, how it is passed to humans (e.g. directly or indirectly), and associated symptoms of the disease. Infection may be due to various agents (e.g., viral, bacterial, protozoal, fungal, or parasitic).

Controlling Exposure to Zoonosis

If the institution’s risk assessment shows that there is a risk of exposure to zoonoses for which effective human vaccines exist, the vaccinations should be considered unless employees can demonstrate that they are already immune. Though immunization is a useful supplement to work controls and the use of personal protective equipment, it should not be seen as the primary or sole protective measure.

Some organizations may choose to medically screen new employees. Any organizations wishing to conduct testing prior to hiring new employees should seek out the proper legal advice before proceeding. It is advisable to medically screen new employees as this could identify their immunity status. This may also indicate existing conditions that would make employees vulnerable to infection.

When an animal has died in a zoo or aquarium, care should be taken in handling the carcass. Any post-mortem examination and disposal of remains must follow agreed-upon safety procedures. Extreme care is required for employees handling dead animals, including those used in feeding other animals, due to the potential risk of cross infection.

To reduce the risk of zoonotic infections, good animal husbandry techniques should be implemented, including:

• Maintaining good standards of hygiene in aquatic exhibits and animal enclosures, and exercising care when using water hoses during cleaning so as to reduce the creation of aerosols
• Regular health checks performed by a veterinarian, including deworming, skin treatment programs, and vaccination
• Requiring good practices when staff perform blood draws, including:
  ◦ Using vacutainer devices rather than needles and syringes when appropriate
  ◦ Disposing needles in a ‘sharps box’
  ◦ Making arrangements for the proper disposal of sharps and other clinical waste
• Avoiding mouth-to-mouth resuscitation techniques on newborn animals by staff, and using traditional husbandry methods instead
• Avoiding the use of bare hands when handling birth products
• Disposing of animal waste correctly
• Providing appropriate personal protective equipment and monitoring its use
• Encouraging and following the highest standards of personal hygiene among staff members

Zoo and aquarium employees may have contact with animal excrement or bodily fluids that contain infectious organisms. Personal hygiene in the zoo or aquarium environment is not only good practice, but it is also a very important control measure in reducing the risk of acquiring zoonotic infections.

**Information, Instruction, and Training**

Employees and volunteers should be trained in the zoonotic risks associated with working with animals, as suggested by the institution’s veterinary staff in consultation with local medical professionals. To assist with early diagnosis and infection controls, employees should be encouraged to report any suspicious symptoms they may have to appropriate medical personnel (zoo consultant or personal physician). Zoonotic disease awareness training should be appropriately documented.

The following controls are suggested, and should be planned and implemented locally with shared understanding by the curatorial, veterinary and medical teams:

• Adequate washing facilities should be provided—including running hot, cold, and warm water, soap, and paper towels—whatever employees work with animals.
• Cuts and abrasions should be washed immediately with soap and running hot water. Minor injuries can be treated with first aid practices, while more serious injuries should be attended to by a first responder or treated at a medical clinic.
• Any existing cuts, abrasions, and open sores must be covered with a waterproof dressing before starting work.
• Employees must wash their hands regularly, especially before and after they eat, drink, smoke, or use the toilet.
• Employees should eat only in designated clean areas.
• Employees should be trained to:
  ◦ Avoid any face-to-face contact with animals wherever possible.
  ◦ Keep hands away from mucous membranes, particularly the mouth, nose, and eyes.
  ◦ Never taste or eat food intended for animals.
• Employees should be trained to recognize zoonotic infection risks and to be knowledgeable of the necessary control measures.
• Protective clothing should be provided and monitored. Protective clothing should remain in animal areas if possible.
• Employees should disinfect footwear if necessary, and wash their hands after handling contaminated clothing and before leaving animal areas.
**Personal Protective Equipment (PPE)**

Risk Assessments should focus on identifying controls that will eliminate or reduce exposure to sources of infection. There will be activities where the residual risk must be controlled further by the use of personal protective equipment (PPE). Such activities might include:

- Cleaning aquatic animal exhibits or enclosures/shelters, and disposing of animal waste
- Helping animals with birthing process
- Handling the products of birth (e.g., placenta)
- Examining animals’ mouths or carrying out rectal examinations
- Handling tissue or bodily fluid samples
- Handling dead animals and preparing dead animals for feeding purposes

PPE might include overalls, waterproof aprons, steel-capped boots or Wellingtons, gloves, gauntlets, or chain mail gloves. Face protection, such as masks or goggles, may be appropriate where there is a risk of physical injury to the eyes or of bodily fluids splashing into the eyes or face. Any employee required to wear respiratory protective equipment (RPE) must undergo a face fit test and an annual medical evaluation to make certain that it can be worn correctly ([https://www.osha.gov/video/respiratory_protection/fittesting_transcript.html](https://www.osha.gov/video/respiratory_protection/fittesting_transcript.html))

Any PPE must be suitable for the intended use and properly maintained. It must fit properly.

**Eye Wash Stations**

Eye wash stations should be located throughout the zoo or aquarium, especially in areas where chemicals are used. The water source available in the area may impact the type of station selected. Departments should keep logs of regular eye wash station checks. The stations should be checked to make sure they are functioning properly. Gravity feed units require the preservative to be drained and refilled based on the manufacturer’s recommendations. Eye wash bottles, if used, should be checked regularly for expiration dates. ([https://www.osha.gov/SLTC/etools/eyeandface/employer/requirements.html](https://www.osha.gov/SLTC/etools/eyeandface/employer/requirements.html))

**Animal Carcasses and Disposal of Clinical Waste**

In the case of the death of an animal, care should be taken to prevent the transmission of zoonotic disease. When any animal has died, the carcass (body) should be safely removed to a suitable, designated post-mortem area isolated from clinic and other animal areas. Where refrigerated storage is necessary, the carcass should be kept in a clearly marked refrigerator that is **not used for storing animal or human food**. Carcasses or parts thereof should be wrapped and sealed to prevent leakage, and clearly marked.

Veterinary staff and their assistants should identify all clinical waste, make sure that it is appropriately stored away from other waste material, and collect and dispose of it regularly in the correct manner. There are often legal controls on the disposal of clinical waste, and a local waste disposal authority (normally county council or other authority) should be consulted regarding specific regulations.
Disposal of carcasses and organs following post-mortem examinations should be carried out as soon as it is practical. Contact with animal carcasses introduces the potential for both safety and health hazards, and should only be performed by those who have had appropriate training.

**Prevention of Animal Care Staff Injury during Animal Restraint**

The need for chemical restraint should be determined and carried out only by zoo or aquarium veterinarians and/or the supervising Curator under veterinary authority.

Any non-chemical restraint will probably be carried out by the supervising Curator and other trained staff as needed.

**Example of restraint equipment explanations and locations from a zoo:**

**Physical Capture Equipment (Examples)**
- Many invertebrates, fish, and amphibians: Nets, seine nets, boxes or buckets
- Reptiles: Snake hooks and grabbers, nets
- Birds: Hoop and extension nets, bird traps
- Mammals and large reptiles: Hoop nets, throw nets, ropes, plastic tie wraps, heavy packing blankets, baffle boards (eg block boards for seals), catch-all poles, snake hooks, tongs, chain-link capture cage (eg for river otters)

**Restraint Equipment (Examples)**
- Mammals: Specialized restraint boxes, such as the seal restraint box. These boxes may be used in conjunction with, or separate from, positive-reinforcement training.
- Birds: Gloves and towels
- Venomous snakes: Snake tubes, snake hook or pole press to secure snake’s head just prior to grasping by hand or snake tongs, cobra shift box, Hex Armor Gloves
- Crocodilians: Shift-box with movable (restraint) wall, packing blanket or towels, ropes as necessary, large plastic zip ties, electric or duct tape, block boards to create a soft barrier to protect crocs head and snout from potential damage
- Komodo dragons: Shifting box, catch-all noose pole, Midwest grabber for small dragons, Kevlar chaps, heavy boots, heavy bite gloves or Hex Armor Gloves, electrical tape, ropes if necessary
- Sea turtles: Rope harnesses with surface floats, stretchers, “straitjackets,” “kiddie” pools
- Freshwater turtles: Towels, tubs, and nets
- Amphibians: Safe, species-specific restraint boxes
- Fish: Pole stretchers, cargo nets, “kiddie” pools, squeeze cages/boxes, PVC/plastic mesh barriers/corrals.
- Invertebrates: Safe-capture boxes, etc.

**Taxa-specific example practices for Birds:** Long-handed nets should be kept in service areas of all bird enclosures. Chemical restraint is generally not used. Depending on the species (herons, cormorants, and raptors) protective eye gear and gloves may also be worn. Birds should be approached slowly, covered with nets quickly, and held carefully so they do not injure themselves in nets. Special care should be taken with birds’ beaks and claws. Birds should be removed from nets being held to avoid injuries to either bird or handler.

**Taxa-specific example practices for Mammals:** Emergency equipment used may be in the form of specialty nets, throw or drop nets, a hoop net, bite gloves, catch-all dog noose, and specially designed cages for otters. All of this equipment should be located in close proximity to the animals' exhibits and holding locations. Care must be exercised when using this equipment so that the animal is not harmed and the handler is protected from injury. When an animal’s neck is in a restraining noose, special care is required to avoid choking the animal. A common modern practice with non-emergency restraint is shift-box-training mammals through operant conditioning. If used routinely, the shift box may also be used as a “safe” space for an escaped animal to enter, for non-routine transfers, etc.
Pinnipeds can be restrained in two basic ways. Due to their size, it is possible to manually restrain them with the assistance of several staff persons, although this technique is used only as a last resort. Only experienced staff persons should carry out this procedure. The normal restraint procedure may involve the use of a specially designed aluminum restraint box that can be placed over seals to minimize their mobility. An opening at the back of the box allows for hindquarter restraint and blood sampling, if necessary. In almost all cases, the use of this box will be managed by the supervising Curator and other trained personnel.

Example of restraint equipment ideas and locations from an aquarium:

Invertebrates and Sea Jellies: Many aquatic and terrestrial invertebrates like jellies can be harmed if picked up by hand, or even if netted. Jelly bodies need to be in water at all times. Most aquarists move them in bowls or plastic bags. Maneuver the animal to the surface using a swirling or vortex motion with your hand or extension “wand” (e.g., PVC pipe) in a clock-wise motion if the jelly is not circumnavigating the tank normally and arriving at the surface on its own. Once at the top, use gentle but constant action, drawing water slowly into the container or bag and pulling the jelly with it.

Sharks, Rays, and Other Fish: For restraining sharks, rays, and larger fish, the aquarium may use vinyl-covered canvas or cargo net stretchers, squeeze cages/boxes, “kiddie” pools, or a combination of these. The use or combination use of these items is dependent on the location of restraint, the size and species of animal to be restrained, and the purpose of the restraint.

To capture fish in the collection, facilities may use various nets and net trays. Their use is dependent on the size of the fish and the area in which the fish is to be captured. Nets should be kept near appropriate tanks.

Sea Turtles: Restraint may be accomplished in a variety of ways. The following is just one example, and indicates several principles important to the effective control of a sea turtle. Turtles may be secured in padded elastic cord harnesses at the surface of the water. These harnesses are constructed from nylon elastic cord and loop around and under the turtle’s neck and around and under the body of the turtle. Under the neck, the rope is surrounded with neoprene padding to prevent compromising the esophagus. Where the two loops meet on the plastron of the turtle, either a large boat bumper is secured, or the harness is attached to a point on the catwalk that surrounds and hangs over the aquarium water surface. This bumper prevents the turtle from diving far into the water column and can be removed as needed. The attachment of the turtle to a point on the catwalk support prevents larger turtles from moving about the aquarium while harnessed. When harnessing and attachment to the catwalk are employed, the turtles are positioned at intervals sufficient to prevent interaction with other turtles. Sea turtles are often removed from the exhibit and are transported in specially designed “straitjackets” that secure the turtle from movement and allow for safe carrying of the animal while restrained. These items should be kept near the tank.

Freshwater Turtles: Turtles are moved using large plastic tubs, and can be wrapped in damp towels to restrict movement. The tubs should be kept in the animal department storage area when not in use.

Venomous Snakes: Restraint can occur through a variety of methods. Some facilities restrain vipers with the combination of a pinning device and then the use of a clear restraint tube. For more agile cobras, custom restraint boxes may be attached to their habitats. With these boxes, one can chemically immobilize or use a restraint tube with these animals. These restraint tools should be kept in the backup area for routine and emergency use.

Alligators and Crocodiles: Capture and restraint of large crocodilians is a specialized process that often requires a very hands-on approach. The crocodilian in need of restraint may be first shifted into a crocodile holding pool location prior to a restraining procedure. This would ideally be accomplished the day before a process. Crocodile holding can be designed specifically for isolation and medical treatment processes.

A new and effective approach to croc restraint is to box-train the crocs through positive reinforcement training, just as mammals are box-trained. The animals become habituated to the box, and enter readily when necessary.
Safety for Elephant Care Professionals – A Specific Example from Zoos

The AZA Standards for Elephant Management and Care outline the best practices for optimal elephant care and occupational safety. Each zoo caring for elephants must be in compliance with these standards. The document can be found online at https://www.aza.org/uploadedFiles/Conservation/Commitments_and_Impacts/Elephant_Conservation/ElephantStandards.pdf

Additional training—all members of the elephant care staff are required to complete the AZA Principles of Elephant Management I course. The Elephant Manager is required to complete additional training by completing “AZA Principles of Elephant Management II,” a facilities-based course that includes experience with managing live elephants with the use of barriers or restraints in place, and the application of advanced safety principles of elephant management, care, welfare, and occupational safety.
SECTION THREE: RESPONSE

RESPONSE: ESTABLISHING AN INCIDENT COMMAND SYSTEM

Incident Management System

An organization’s ability to respond to or overcome emergency or crisis situations is directly related to the existence of a well-organized Incident Management System. Zoos and aquariums of all sizes can benefit from the resources provided through Federal Emergency Management Agency’s (FEMA’s) National Incident Management System. An Incident Management System should be specifically adapted to fit the size, conditions, and nature of each organization individually.

FEMA’s National Incident Management System assists organizations by providing information on developing a standardized approach to incident management that is scalable and flexible, recommending techniques for enhanced cooperation between responders, detailing comprehensive coverage of all-hazards preparedness, and describing best practices procedures for emergency response.

Incident Management System resources are available on FEMA’s website: http://www.fema.gov/national-incident-management-system

For further information and a complete overview of emergency preparedness and incident management, please refer to FEMA’s NIMS guide document: http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf

Incident Command System (ICS): Roles and Responsibilities in Emergencies

Though many staff members’ duties will vary between different emergencies, there are some roles with very important duties that are common across most emergencies. Staff member knowledge of responsibilities and actions during an emergency is very important, and entails several possibilities: shelter-in-place/wait-for-instruction in “readiness” mode; evacuate area to an “assembly point”; or respond appropriately to the emergency. Potential emergency responses need to be well-planned in advance of actual implementation so they are effective in a real emergency situation.

**Initial Observer**

In every emergency, the first person to discover the situation is known as the Initial Observer. The Initial Observer plays an important role in the emergency response process: they are the first one to encounter the situation and are responsible for relaying the information and notifying others. The success of an emergency response system is dependent upon the Initial Observer’s ability to communicate and alert the proper authorities to the situation. The following are steps suggested for the Initial Observer:

- Any staff member or volunteer who encounters an emergency situation should immediately begin contact with Base radio/Dispatch via radio or phone, and then maintain safe visual contact with the situation until assistance arrives. Staff should never attempt to resolve the emergency alone.
• Using their Plain English Emergency description system, the Initial Observer should clearly communicate the situation including their name, the type of emergency, and the location. Base/Dispatch should be responsible for confirming this information, as the Initial Observer may be someone unfamiliar with the radio system.

• If taking a report from a guest, team members should inform Base/Dispatch and attempt to confirm the report in a safe manner.

• The Initial Observer and other staff members present should be prepared to communicate further information to emergency responders.

• All staff members must be prepared to assist zoo/aquarium guests and others in the area of the emergency, and direct or guide them to safe areas.

**Incident commander**
Every zoo or aquarium should have an Incident commander designated at all times. The Incident commander should be the chief officer on duty or senior-most staff member. The Incident commander is in charge of the situation from the time they assume responsibility until the situation is resolved and the All-Clear is called. Below are a few suggested guidelines for the position of Incident commander.

• The Incident commander may transfer responsibility to another, more qualified responder. Any transfer of responsibility must be promptly and clearly communicated via radio.

• The specific duties of the Incident commander will vary with the nature of the emergency; see individual sections for instructions.

• All responding staff members are under the direction and supervision of the Incident commander until the situation is resolved and the All-Clear is called.

*Only the Incident commander may make the All-Clear call.* The chief officer on duty is responsible. After every drill or major emergency, a Quality Review should be conducted as soon as possible. All staff that responded to the emergency should attend, if able. The purpose of the Quality Review is to evaluate the event and response process, and make recommendations for improvement.

**Internal Communication in Emergencies**
In the event of an emergency situation, appropriate personnel should be contacted as soon as possible (AZA accreditation standard 11.2.6). Every zoo and aquarium security management group should develop guidelines for communicating in emergency situations. The purpose of these guidelines is to maintain the safety and well-being of the public and zoo/aquarium personnel, and safety of the animals and zoo/aquarium property. Each zoo and aquarium might want to consider establishing consistent, Plain English (aka “plain text”) emergency titles that could be used when reporting an emergency situation to a staff member; this “common language” should be used instead of codes in an emergency because “common language” or Plain English is often peoples’ default way of communicating an emergency.
Zoo and aquarium employees typically communicate to each other via radio. In case a staff member with a radio is needed, someone with a radio should always be present at security or radio base station so they can make a radio call for the appropriate person and response.

**RESPONSE: CRISIS COMMUNICATION**

**Responding in Crisis Situations**

During a crisis, whether it is an escaped animal, an injured guest, or another emergency, effective internal and external communications must be established and maintained. A crisis can take many forms, from sudden catastrophic emergencies to management decisions that backfire and result in communication disasters.

**Crises Defined**

The following includes *(but does not comprehensively illustrate)* examples of crises:

- Natural disasters including floods, hurricanes, tornadoes, winter storms, earthquakes, and fires
- Animal deaths (natural, or humane euthanasia), animal escape, lost animal, epidemic, animal treatment concerns
- Management – loss of funding, mismanagement, employee personnel issue
- Keeper/aquarist death or injury
- Visitor death or injury
- Civil disobedience, including animal rights activists
- Environmental issues related to the zoo or aquarium

**Crisis Management Team**

It is highly recommended that every zoo and aquarium establish a Crisis Management Team. This team should consist of, but is not limited to, the following team members *(crisis level, severity, and nature determine team engagement)*:

- President & CEO
- Deputy Director/Chief Operating Officer
- Director of Operations/Maintenance
- Director of Animal Programs/General Curator
- Director of Veterinary Services/Chief Veterinarian
- Director of Education

**Crisis Command Center**

The crisis command center should be a central meeting location on zoo/aquarium property (can be a pre-determined location). An alternate location for the command center should also be identified, should the primary location be in the area of the crisis event; this location is often mobile. The command center and alternate location should have items suggested by FEMA’s NIMS (link above):
Crisis Communication Tactics and Protocols

Once a crisis has been identified, the Incident Command staff members should meet in the command center. The following points are tactics and strategies recommended for managing a crisis situation.

- Staff should notify the appropriate emergency response and public safety organizations.
- The Public Relations Team should be assembled in the command center.
- All pertinent facts should be gathered as quickly as possible – What happened?
- The situation should be assessed and discussed – What is the impact? What are we doing?
- The Public Relations Team and other involved staff should develop a communications strategy (prepare fact sheets or a sequence of events as soon as possible where applicable).
- Designate a spokesperson.
- Notification should be given to all top managers and designated individuals.
- Managers should be briefed on the situation and its potential impact on the zoo/aquarium.
- The media should be contacted as soon as reliable information is available. Accurate and timely information is critical to minimize rumors and the spread of incorrect information.
- Contact should also be made with internal employees, external board members, zoo/aquarium members, elected and appointed officials, key stakeholders, and community partners and organizations.

Early in the crisis, the health and safety impact on guests and the community should be the primary concern, followed by what actions are being taken to manage and rectify the situation. Injuries, fatalities, and damages are important to communicate. The “what happened” facts should be released to staff, members, media, and other locally identified parties as they are confirmed, with frequent updates as any new information becomes available. As the crisis concludes, the “what are we doing” facts will cover the recovery/contingency efforts. The Crisis Communication Team or designated staff members should be prepared to answer questions regarding next steps.

Appendix 6 contains an expanded Crisis Communication Checklist.

Emergency Descriptions

Below is a sample list of emergency descriptions. Zoos and aquariums should choose to have in place a set of Plain English emergency titles for use in communication during emergency or crisis situations. “Plain English” phrases have been made available for the purposes of this document, because most Incident Command experts now encourage Plain English phrases that are standard for the region/area, rather than “codes”.

Animal Escape
Animal Medical Emergency
Unauthorized Person in Animal Exhibit
Envenomation
Human Medical Emergency
Lost Child
If an emergency of any sort is called, officials at the main zoo radio (“Base” or “Dispatch”) should announce the situation and direct any action that needs to be taken. Employees should remember to remain calm and exercise good judgment. Any staff member who arrives first on the scene of an emergency should immediately notify Base/Dispatch via radio or phone. It is important to be specific as to location, what is involved, injuries, etc. Upon hearing an emergency announced, employees should report immediately to a nearby safe place for further instructions. Employees should not leave the grounds unless directed to do so. Team members should assist zoo/aquarium guests as needed and avoid taking unnecessary risks. Employees should not speak to media, but instead refer them to the Media Director. Employees must also refrain from discussing specifics of the event with guests.

Facility Closure
Closing a zoo or aquarium is a huge undertaking. For more information on preventing and responding to a facility closure, including an account of a recent closure, visit: http://www.zooanimalhealthnetwork.org/ZooBest.aspx

Response Readiness: Emergency Drills and Training
AZA accreditation standard 11.2.5 states: “Live-action emergency drills must be conducted at least once annually for each of the four basic types of emergency (fire; weather/environment appropriate to the region; injury to staff or a visitor; animal escape). Four separate drills are required. These drills must be recorded and evaluated to determine that procedures are being followed, that staff training is effective, and that what is learned is used to correct and/or improve the emergency procedures. Records of these drills must be maintained and improvements in the procedures documented whenever such are identified. (See 11.5.2 and 11.7.4 for other required drills.)”

The Explanation for this standard is: “Emergency drills determine if institution staff are aware of emergency procedures, and understand their respective duties and responsibilities. Emergency drills enable the institution to identify potential areas that could cause problems in the case of an actual emergency. The institution must have in place appropriate emergency procedures to handle the four basic types of emergencies identified above, and procedures for additional types of emergencies to which the institution may be particularly vulnerable. Staff must be trained in these procedures, and records of such training must be maintained. A drill is defined as a training exercise that physically re-creates an emergency situation and response outside the circumstances of an actual emergency. Results stemming from an actual emergency are of interest, and should be appropriately analyzed, but cannot be counted as a drill for accreditation purposes. These live-action drills may be supplemented (not replaced) with table-top drills or other emergency preparedness scenarios.”

RESPONSE: ANIMAL-RELATED EMERGENCY PROCEDURES
Although numerous precautions are taken to protect all staff working with animals, sometimes accidents can result in emergency situations or keeper/aquarist injuries. In order to prepare for animal-related emergencies or crisis events, zoos and aquariums should establish specific
emergency procedures pertaining to particular situations. The following are examples of several of the most common emergency situations encountered by zoos and aquariums that involve animals, and an emergency response protocol. These are present, for the purpose of this document, to serve only as examples and are not intended to be all-inclusive or to encompass the concerns of every facility.

Each individual organization is encouraged to refer to the Federal Emergency Management Agency (FEMA) guidelines for developing an Incident Management System to best fit their needs and conditions.

For more information, please refer to FEMA’s National Incident Management System guide:

Animal Escape and Emergency Weapons Teams
This section describes staff abilities and possible responses to an animal that has escaped containment. All animal escapes are serious situations; these are compounded when the escaped animal is considered to be potentially dangerous. (See Appendix 1 for more detailed information)

All Staff
- Animal Care staff will probably be the first to respond and will have the best information about the individual history and behavior of the escaped animals.
- Once an Animal Escape is announced over the radio, all routine radio traffic must cease in order to keep the radio free for emergency coordination.
- Only relevant radio transmissions should be aired, and many of these will be by Animal Care staff trying to assess the situation and contain the animal. All staff should keep all necessary transmissions brief and to the point. Personnel without radios should stay close to those with radios.
- Each institution may have a different response protocol for various Animal Care staff, depending on size of facility and type of animal that has escaped.
- Primary responsibility for containment and recapture of an escaped animal lies with the Animal Management and Veterinary teams.

Veterinary Staff Response and potential for immobilization
- In an Animal Escape Emergency, Veterinary staff members should automatically respond.
- Veterinary personnel should immediately radio acknowledgment of the emergency radio call and proceed in a safe manner to the scene with appropriate recapture equipment and chemical immobilization agents.
- Often, the zoo’s veterinary technicians are responsible for collecting all of the appropriate equipment from the zoo hospital for the recapture of the escaped animal as well as transporting this equipment to the scene in an enclosed vehicle. The technicians will be under the direct supervision of the Veterinarians.
- If the animal is chemically immobilized, the Veterinarian and curator often decide when the animal may be approached and contacted, and will assume responsibility for the safe transport of the immobilized animal.
• Non-veterinary personnel should not touch darts, either on or off the animal, or touch injection sites on the animal.

**Emergency Weapons Team**
A zoo that maintains certain inherently dangerous animals in its collection may also maintain firearms and trained staff in the event that human life is threatened by the escape of a dangerous animal. The following is an example of guidelines for an internal Emergency Weapons Team (and see Appendix 1).

The Emergency Weapons Team (EWT) should be composed of an EWT Leader, and may include a limited number of personnel from the zoo. Team members are selected based on firearm experience and decision-making capabilities. The team consists of trained members. Participation on the team is often voluntary.

All EWT members receive periodic instruction in firearm handling and safety, and participate in regularly scheduled field practice sessions. A written record of attendance and performance is maintained by the EWT Leader.

Field training sessions and classroom sessions should be offered regularly, and attendance criteria established. All EWT members should be expected to meet and maintain certain performance criteria and to be certified by the EWT leader on a regular basis.

New EWT members often must meet performance criteria established by the EWT Leader before they can respond to an emergency situation with firearms. EWT members often agree to participate in a rotation schedule designed so that at least two team members are on zoo grounds every day. It should be the responsibility of each member to be present on grounds on their assigned days or to designate a substitute.

Use of firearms will occur only in the event that a human life is threatened or if a dangerous animal could escape zoo grounds. Only EWT members should carry or use firearms. The primary shooter should always designate a back-up shooter. EWT members must exercise utmost discretion in the use of firearms.

Weapons guidelines: For safety, weapons must be loaded only at the escape site. Once a round is chambered, the firearm should remain on safety until fired or no longer needed. The weapon should always be carefully unloaded and returned to the gun cabinet after use.

For safety, EWT members should position themselves to provide a clear line of sight, to minimize deflections or ricochets.

**EWT Response Guidelines**
• Emergency Weapons Team (EWT) members should be allowed to deploy in the event of an Animal Emergency Code involving a designated dangerous species, without waiting for specific requests from recapture staff or an Incident commander.
• EWT members should immediately radio acknowledgment of an Escaped Animal radio call, and then proceed in a safe manner to the Security office to obtain gun cabinet keys.
• The EWT should respond in pairs at all times and coordinate entry to the escape area with the Incident commander.
• The team should then proceed to the gun cabinet nearest the area of the escape, access the appropriate weapon, and radio readiness to the Incident commander.
• EWT members should always remain in the area until the animal is secured, there is no risk to human safety, and the Incident commander has called the All-Clear.

For this example plan, “Animal Escape” is called in Plain English.

Initial Observer
• Any staff member encountering or being informed of an Animal Escape must immediately begin communication efforts.
• The Initial Observer should contact Base/Dispatch via radio or phone and announce their name and the nature and location of the emergency, and request confirmation from Base/Dispatch. (e.g., “This is John in Reptile dept.; we have an Animal Escape -- an alligator behind the alligator holding building. Base/Dispatch confirm.”)
• After Base/Base/Dispatch confirms the communication, the Initial Observer should maintain safe visual contact with the situation until assistance arrives, and be prepared to communicate further information to emergency responders. (e.g., “The alligator is moving up the pathway towards the snack bar. There are zoo/aquarium visitors up there, we need crowd control.”)
• Until assistance arrives, the Initial Observer should be prepared to assist zoo/aquarium guests and others in the area of the emergency by directing them away from the site and to safe areas as necessary.
• Once the Incident commander arrives on the scene, the Initial Observer should move to a safe location or provide other assistance as directed by the Incident commander.

All Staff
• Once an Animal Escape is announced over the radio, all routine radio traffic must cease in order to keep the radio free for emergency coordination. Only relevant radio transmissions should be aired. Keep all transmissions brief and to the point. Personnel without radios should stay close to those with radios.
• The first radio responses acknowledging the Animal Escape call should be made by Base/Dispatch, the Curator On Duty/Incident commander, Veterinary staff, and the Emergency Weapons Team (EWT, further details in Appendix 1). For example “Vet Hospital acknowledges and is responding to the location in a van”. Other necessary responses and acknowledgments should be held until these critical radio calls have been transmitted.
• All staff must follow instructions from the Incident commander as they are announced.
• All staff must follow instructions for each department as indicated below.

Incident commander
• No one should enter the area without the knowledge and approval of the Incident commander. The Curator on Duty (CoD), managers of the animal area involved, and keepers/aquarists directly assigned to the area involved should proceed in a safe manner to the location. In an Animal Escape situation involving a dangerous species, all approaches to the area must be made from the safety of an enclosed vehicle or in conjunction with Emergency Weapons Team (EWT) members.
• The Incident commander must announce himself/herself clearly via radio and immediately proceed to the scene in a safe manner to communicate with the Initial Observer and begin efforts to coordinate animal containment and recapture.
• If the Incident commander is not in proximity to a vehicle when the Animal Escape is called, he/she should remain in a safe location and radio for immediate transportation to the scene, or proceed in conjunction with EWT members.
• All staff, volunteers, interns, contract personnel, etc. working in the area involved should be accounted for and stationed in a safe area.
• All responding staff members are under the direction and supervision of the Incident commander until the situation is resolved and the All-Clear is called. Only the Incident commander may make the All-Clear call.
• All other animal management staff should remain in a safe location and stand by for requests or instruction from the Incident commander.
• The Incident commander should give regular radio updates on the status of recapture efforts (animal location, direction of travel, requirements for crowd control, etc.) as well as requests for additional personnel, veterinary requirements, Emergency Weapons Team members, vehicles, etc.

• The Incident commander is responsible for convening all responding staff immediately following the “Animal Escape” resolution to review and evaluate the event and response process, make any recommendations for improvement, and evaluate staff members’ performance as a learning tool.

Base/Dispatch Communications
• Security Base/Dispatch is responsible for facilitating and coordinating communications during the emergency. This includes ensuring that all required telephone notifications are made, maintaining contact with the Incident commander, directing external emergency personnel to appropriate access points, coordinating the delivery of necessary resources (personnel, equipment, weapons, vehicles, etc.) to the site, etc.

• Base/Dispatch must immediately confirm and repeat the report from the initial observer to determine the complete and accurate transmission of the emergency.

• Base/Dispatch must repeat the report on all alternate radio channels to make sure that all radio-carrying staff members are notified of the emergency.

• Base/Dispatch must immediately activate recording equipment to make sure that all radio communications are recorded in order to review the events.

Other Staff Response
• In the case of an event involving a life-threatening animal, MOST STAFF should shelter in a safe place.

• Staff members that respond to the incident are required to be in enclosed vehicles. This includes all staff, not just those working in animal management departments.

• Animal management staff in areas unrelated to the escape should remain in that safe location and stand by for requests or instruction from the Incident commander.

• Keepers should secure their animal areas as necessary or as instructed by the Incident commander. Keepers should not proceed to the scene unless assistance is requested by the Incident commander.

• Animal keepers should clear phone lines, cease all radio traffic, and prepare to assist in crowd shelter-in-place actions or crowd control, surveillance, or recapture as directed by the Incident commander.

• Staff members working in buildings adjacent to public areas should assist in moving zoo visitors into safe areas of the building. Do not leave a protected area unless it is safe to do so.

• Staff members should offer vehicle assistance if vehicles are requested and their department has a vehicle with an enclosed cab available.

• Staff members should make sure that non-radio-carrying personnel in or near their areas are informed of the emergency, and direct such personnel to safe locations.

Maintenance Department Response
• In the event of a dangerous animal escape, maintenance staff members should secure all perimeter gates, and then shelter in place and/or proceed in an enclosed vehicle. Once in place, gate-closing employees must remain in a secured vehicle near the perimeter gates to allow access for responding personnel.

• Staff members must monitor radio transmissions in case there are requests for assistance.

• Maintenance should be prepared to assist with:
  o Transporting personnel to the scene in enclosed vehicles
  o Delivering equipment or supplies (ladders, ropes, fire extinguishers, etc.) to the scene in enclosed vehicles
  o Other requests made by the Incident commander
  o Remain at gates or be prepared to assist until the Incident commander calls All Clear.

Admissions Department Response
• Admissions staff members must close zoo admissions gates as directed by the Incident commander.

• Staff members should assist in directing visitors to safe areas, and then shelter in place themselves.
- (Procedure should be followed for addressing admissions once the Incident commander has called the All Clear).

**Education Staff Response**
- Education staff members must remain in, or move to, a safe location. They should not make attempts to proceed to the scene.
- Staff should offer vehicle assistance if vehicles are requested and their department has safe access to a vehicle with an enclosed cab.
- Any team member leading a program must remain calm and guide the participants to the nearest safe, enclosed location with doors that can be secured. (Safe locations for each facility have been identified and prepared as part of the planning process, and are on area safety maps).
- Staff must perform a participant head count before and after moving the group to a safe location.
- Staff should remain with their group in the safe area until the Incident commander has radioed the All-Clear.

**Animal Attack** (See Appendix 1 for detailed information on shoot teams)

Animal attack emergency response procedures must be defined and personnel must be trained for these protocols (AZA accreditation standards 11.2.5, 11.5.3). (And see above section, as well as Appendix 1)

Animal attack emergency drills should be conducted at least once per year to make sure that the institution’s staff knows their duties, responsibilities, and how to handle emergencies properly when they occur. All drills need to be recorded and evaluated to assure that procedures are being followed and that staff training is effective, and so that emergency procedures can be evaluated, corrected, and improved. Records of these drills must be maintained and improvements in the procedures duly noted whenever they are identified.

If an animal attack occurs and injuries result from the incident, a written account outlining the cause of the incident, how the injury was handled, and a description of any resulting changes to either the safety procedures or the physical facility must be prepared and maintained for five years from the date of the incident (AZA accreditation standard 11.5.3).

**Animal Medical Emergency**

For this example, an “Animal Medical Emergency” is called when an animal is ill, injured, or requires immediate medical attention for other reasons.

*This “Animal Medical Emergency” is presented as an example of a real zoo protocol, so contains a variety of required tasks (“must” or “will” be done) specific to this example protocol.*

**Initial Observer**
- Any staff member encountering or being informed of an animal in apparent distress must immediately begin communication efforts.
- The initial observer should contact Base/Dispatch via radio or phone and announce their name and the nature and location of the emergency, and request confirmation from Base/Base/Dispatch. (e.g., “This is Mary in Reptiles; we have an Animal Medical Emergency for a Komodo dragon in the Komodo exhibit. Base/Dispatch confirm.”)
- After Base/Dispatch confirms the communication, the Initial Observer must remain on the scene until Veterinary and/or Animal Management staff arrives.
- Once the Incident commander arrives on the scene, the Initial Observer may depart unless otherwise instructed.

**Incident commander**
• The Curator on Duty (COD), managers of the animal area involved, and keepers/aquarists directly assigned to the area involved should proceed to the location.
• The most senior veterinarian on site will assume the role of Incident commander. The COD is the default Incident commander until the Curator, Assistant Curator, or Lead Aquarist of the animal area assumes that authority. The Incident commander must announce himself/herself clearly via radio and immediately proceed to the scene to assess the situation.
• The Incident commander should give regular radio updates on the status of the emergency, as well as requests for additional personnel, veterinary requirements, nets, herding boards, etc., as capture may be required for some veterinary emergencies.
• The Incident commander is responsible for convening all responding staff immediately following the emergency resolution to review and evaluate the event and response process, make any recommendations for improvement, and evaluate staff members’ performance as a learning tool.

Base/Dispatch Communications
• Base/Dispatch must immediately confirm and repeat the report from the Initial Observer to determine complete and accurate transmission of the emergency.
• Base/Dispatch personnel are expected to accomplish the required communications independently and without instruction from the Animal Management or Veterinary personnel involved.
• Base/Dispatch must repeat the report on all alternate radio channels to make sure that all radio-carrying staff members are notified of the emergency.

Veterinary Staff
• In an Animal Medical Emergency, Veterinary staff members must automatically respond.
• Veterinary personnel should immediately radio acknowledgment of the Animal Medical Emergency radio call, and then confirm with the Initial Observer or Incident commander whether the animal in distress is being brought to the veterinary clinic, or if Veterinary personnel are needed on the scene.
• The primary responsibility for responding to an Animal Medical Emergency lies with the Animal Management and Veterinary teams. These staff members must be able to communicate rapidly and clearly; their communications should be given radio priority.
• If the animal is chemically immobilized, the Veterinarian will decide when the animal may be approached and contacted, and will assume responsibility for the safe transport of the immobilized animal. Non-veterinary personnel should not touch darts, either on or off the animal, or touch injection sites on the animal.

Unauthorized Person in an Animal Enclosure

If an unauthorized person is found inside an animal enclosure, the highest priority is removing the intruder OR dangerous resident animals from the animal area swiftly and safely. The first goal of emergency responders is to identify a safe means of directing the intruder away from the animals and to a safe location.

For this example, the “Unauthorized Person” emergency call will be used.

This “Unauthorized Person” emergency response is presented as an example of a real zoo protocol, so contains a variety of required tasks (“must” or “will” be done) specific to this example protocol.

In the event that an intruder into an animal exhibit is injured, impaired, or otherwise unable to exit the animal area independently, the situation is treated at the same level as an Animal Escape.

Initial Observer
• Any staff member encountering or being informed of an “Unauthorized Person in an Animal Exhibit” must immediately begin communication efforts.
• The initial observer should contact Base/Dispatch via radio or phone and announce their name and the nature and location of the situation, and request confirmation from Base/Dispatch.
(e.g., “This is Alice in Commissary; we have an Unauthorized Person in the penguin habitat. Base/Dispatch confirm.”)

- After Base/Dispatch confirms the communication, the Initial Observer should remain on the scene until assistance arrives and be prepared to communicate further information to emergency responders. (e.g., “The guy climbed back out and he ran towards the front entrance.”)
- In the case of an unauthorized intruder in a dangerous animal exhibit, the area keepers should immediately try their emergency recalls or other specific emergency responses directed at the animals in order to keep the intruder safe
- If the individual is unharmed and mobile, attempt to direct them to a means of exit from the animal area or a safe zone within the area.
- Once the Incident commander arrives on the scene, move to a safe location or provide other assistance as directed by the Incident commander.

All Staff
- Once an “Unauthorized Person in an Animal Exhibit” is announced over the radio, all routine radio traffic must cease in order to keep the radio free for emergency coordination. Only relevant radio transmissions should be aired. Keep all transmissions brief and to the point.
- The first radio responses acknowledging the emergency call should made by Base/Dispatch, the COD/Incident commander, the Veterinary staff, and the Emergency Weapons Team. Other necessary responses and acknowledgments should be held until these critical radio calls have been transmitted.
- Follow instructions for each department as indicated below.

Incident commander
- The Curator on Duty (COD), managers of the animal area involved, and keepers/aquarists directly assigned to the area involved should proceed to the location. In a emergency situation, safely moving animals away from intruders is critical.
- The Incident commander must announce himself/herself clearly via radio and immediately proceed to the scene in a safe manner to communicate with the Initial Observer and begin efforts to shift animals and safely remove intruders.
- All responding staff members are under the direction and supervision of the Incident commander until the situation is resolved and the All-Clear is called. Only the Incident commander may make the All-Clear call.
- All other animal management staff should stand by for requests or instruction from the Incident commander.
- To avoid startling the animal or disrupting attempts to separate animal and intruder, no one should enter the area without instruction from the Incident commander.
- The Incident commander should give regular radio updates on the status of shifting/separation efforts, as well as requests for additional personnel, veterinary requirements, Emergency Weapons Teams, vehicles, etc.
- Immediately following the “Unauthorized Person in Animal Exhibit” resolution, the Incident commander is responsible for convening all responding staff to review and evaluate the event and response process, make any recommendations for improvement, and evaluate staff members’ performance as a learning tool.

Envenomation

A bite or sting from a venomous fish, invertebrate, or snake is dangerous and requires prompt emergency treatment. All persons who might be involved in assisting the telephone operators, the Security personnel, the staff members, etc. should study envenomation protocol carefully and be thoroughly familiar with the procedures.

In general, safe management guidelines for an “Envenomation” emergency are as follows:
- Venomous animal exhibits should not be opened by anyone unless another person familiar with the protocol is in the building to render help if an accident occurs.
- All exhibit or reserve areas with venomous animals should be labeled with red numbers that correspond to the numbered packages of antivenin in a specially designated refrigerator (or with hospital emergency phone numbers if the antivenin is kept in the local hospital).
- Under most circumstances, venomous animals should not be worked with late in the day or in cases of severe weather.
- Envenomed victims should be transported to the Emergency Room at the nearest hospital, with documentation of local protocols. Venomous bite or sting treatments requires special skills, and the physicians must be prepared in advance for such an emergency.

**Signs and Symptoms of Envenomation**

**Vipers and Pit-Vipers**
- Local swelling
- Pain or tingling sensation
- Muscle cramps or contractions
- Papillary constriction
- Dizziness, fainting, sweating, or fever
- Discoloration in area of bite, blistering

**Elapids**
- Drooping of eyelids
- Blurred vision
- Difficulty breathing, swallowing, or speaking
- Oculomotor palsy
- Swelling or pain

**Sea snakes**
- Muscle pains, frequently in throat or jaw
- Jaw cramps
- Discoloration of urine
- Difficulty in breathing, swallowing, or speaking
- Swelling or pain

**Example: Emergency Envenomation Procedure for Zoo and Aquarium Personnel**

After a radio call indicates the “Envenomation” emergency, staff should proceed immediately to the site of the victim/venomous animal identified by radio.

**Victim**
- The cage or aquatic exhibit should be immediately closed and locked. If possible, the venomous animal should be contained or caged.
- The venomous animal alarm must be sounded.
- The ID card of the animal involved must be removed for identification and treatment of the bite.
- Personnel should be informed on the whereabouts of the venomous animal.
- All rings, watches, bracelets, etc. must be removed from the person bitten.
- The person bitten must remain quiet and immobilize the bitten part, keeping it just below heart level.
Staff

- Staff members should contact the Hospital Emergency Room. Tell them: that there has been a venomous bite at the zoo/aquarium and a victim is on the way.” Remember to state the venomous animal involved, and if antivenin will be arriving with the victim.
- All venomous animals should be confirmed secure, and none should be loose.
- If a venomous animal is loose and staff is skilled in handling the species/individual, they should contain the animal if it can be done quickly and safely.
- The proper antivenin should be obtained from the refrigerator. All antivenin should be numbered to correspond with the numbers on the cage or aquarium ID cards. Alternatively, the proper antivenin may be stored at the nearest qualified hospital in a working agreement with the zoo or aquarium.
- The proper antivenin, Venom Information Card (VIC), and Hospital Box must be put aboard the emergency vehicle. Staff transferring these items to the emergency vehicle must match the antivenin number on the cage ID card with packages of antivenin being taken to the hospital with the victim.
- The Zoo’s senior staff must be notified if a bite occurs.
- In many cases, it would be beneficial to have a Hospital Box on hand for emergency situations. The Hospital Box should contain a sling, a copy of Venomous Animal Protocol, and other pertinent literature.

Incident commander

(Staff Members in Charge should be designated as “Incident commander”)

- Incident commander should supervise and make sure that all emergency procedures have been followed.
- Leading staff must make certain that the antivenin goes to the hospital with the victim, or that the cooperating hospital has the antivenin ready upon arrival of the victim.
- A leading staff member should ride to the hospital with the victim and advise medical personnel in any way possible.
- The Zoo’s senior leadership team must be notified and updated as soon as feasible.

Other Zoo/Aquarium Staff

- Zoo/aquarium staff members are required to stay OFF the radios during emergency unless requested to help.
- Zoo/aquarium staff with radios should stand by if needed.
- Administration staff should stand by with a back-up vehicle.

First Aid: Jellyfish Stings

A person’s sensitivity to stings depends on the species of jellyfish, the penetrating power of nematocysts, thickness of the exposed skin of the victim, and the victim’s sensitivity to the venom. Penetration of a nematocyst into a victim is limited by the length of the tubule. Some nematocysts are unable to penetrate through human skin, so handlers will not feel a stinging sensation when handling these jellyfish. Areas of the body such as the palm of the hands and soles of the feet, where the skin is thicker, are not as affected by the nematocysts as compared to other sensitive areas of the body, such as the eyes and wrist. Some people are more sensitive to the venom and may have allergic reactions (e.g., shortness of breath, slurred speech, disorientation, or unconsciousness). Medical attention should be sought immediately in these situations.

When stung by a jellyfish, carefully remove tentacles that are still on the skin with seawater; do not use freshwater to remove the tentacles, as it will cause the nematocysts to fire. Removing tentacles or bell material with forceps will also protect the rescuer from additional stings. First aid should be administered as appropriate. Treat the affected areas with vinegar (acetic acid), alcohol, ¼ strength household ammonia, or baking soda, which deactivates attached nematocysts and prevents further envenomation. Apply liberally onto the skin. Use cold packs to reduce swelling.
If the person stung shows signs of an adverse reaction, emergency medical assistance should be summoned as soon as possible. First responders and medical personnel need to be informed of species of jelly involved. Jellyfish do not attack, but someone could be stung accidentally if they put parts of their bodies in the jellyfish aquarium tank.

For more detailed information, visit the website of the International Consortium of Jellyfish Stings (ICJS): [http://www.medschool.umaryland.edu/dermatology/jellyfish.asp](http://www.medschool.umaryland.edu/dermatology/jellyfish.asp)

**Response: Human-Related Emergencies**

Zoos and aquariums should be prepared to respond to emergency situations that involve guests. In order to be prepared for various types of human-related emergencies, there are procedures and important information that is recommended for every circumstance. The following are sample procedures for an emergency response system. These are presented to serve as examples for the purpose of this document, and are not intended to be all-inclusive.

Each individual organization is encouraged to refer to the Federal Emergency Management Agency (FEMA) guidelines for developing an Incident Management System to best fit their needs and conditions.

For more information, please refer to FEMA’s National Incident Management System guide: [http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf](http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf)

**Human Medical Emergency**

In a Human Medical Emergency, the highest priority is to provide a prompt response by trained professional personnel.

The following is a Human Medical Emergency example:

All responders to a “Human Medical Emergency” should practice the Check-Call-Care method of response. Trained first responders should make sure that there are no obvious hazards that could cause injury to the responder or cause further injury or harm to the victim. Then, check the victim’s condition. Finally, call for help by contacting Base/Dispatch and/or 911 to activate the emergency response system and listen for instructions.

Employees assisting guests with non-emergency first-aid requests should contact Base/Base/Dispatch via radio or phone and announce their name and the nature and location of the situation. (e.g., “This is Nancy in the Tidal Pool Area; I have a Human Medical Emergency. A guest fell and scraped her knee. Can someone report to the location to provide assistance?”)

Employees assisting guests in the zoo/aquarium should not initiate a Human Medical Emergency call for minor first-aid incidents, such as splinters, small or light abrasions, blisters, requests for Band-Aids, etc.

**Initial Observer**

- Any staff member encountering or being informed of a Human Medical Emergency must immediately begin communication efforts.
- The initial observer should contact Base/Dispatch via radio or phone and announce their name and the nature and location of the situation, and request confirmation from Base/Dispatch. (e.g., “This is Mark in Education; we have a Human Medical Emergency in the Conference Room. Base/Dispatch confirm.”)
• After Base/Dispatch confirms the communication, the Initial Observer should remain on the scene until assistance arrives and be prepared to communicate further information to emergency responders. (e.g., “The lady is complaining of dizziness and is not coherent.”)
• If there is a clear and present danger to the individual and they are mobile, steps can be taken to move the individual to a safe area.
• If there is a clear and present danger to the individual and they are immobile, Base/Dispatch must be informed as soon as possible.
• Once the Incident commander arrives on the scene, assistance should be provided as directed by the Incident commander. Staff should stand by to provide information to arriving EMS personnel.

All Staff
• Once a Human Medical Emergency is announced over the radio, all routine radio traffic must cease in order to keep the radio free for emergency coordination. Only relevant radio transmissions should be aired. All transmissions must be kept brief and to the point.
• The first radio responses acknowledging the Human Medical Emergency call should be made by Base/Dispatch, the Incident commander, and the Communications Coordinator. Other necessary responses and acknowledgments should be held until these critical radio calls have been transmitted.

Incident commander
• The Director of Operations, Loss Prevention Manager, Security Manager, Security Supervisor, and/or Security Officer, along with an EMT when possible, should proceed to the location. In a Human Medical Emergency situation, prompt response by trained personnel can save lives.
• The Incident commander must announce himself/herself via radio and immediately proceed to the scene in a safe manner to communicate with the Initial Observer and immediately provide first responder care.
• All responding staff members are under the direction and supervision of the Incident commander until the situation is resolved and the All-Clear is called. Only the Incident commander may make the All-Clear call.
• To avoid causing confusion or delaying EMS personnel en route to the location, no one should enter the area without instruction from the Incident commander.
• The Incident commander should give two radio updates: one stating that First Responder personnel have arrived on scene, and a second update for the All-Clear call.
• The Incident commander is responsible for convening all responding staff immediately following the Human Medical Emergency resolution to review and evaluate the event and response process, make any recommendations for improvement, and evaluate staff members’ performance as a learning tool.

Base/Dispatch Coordinator
• Will serve as the Communication Coordinator during a Human Medical Emergency incident.
• The Communications Coordinator/Base/Dispatch Officer will facilitate and coordinate communications during the emergency. This includes ensuring that all required telephone notifications are made, maintaining contact with the Incident commander, directing external emergency personnel to appropriate access points, coordinating the delivery of necessary resources (personnel, equipment, vehicles, etc.) to the site, etc. The Communications Coordinator/Base/Dispatch Officer will complete a Human Medical Emergency Response Report.

Lost Child and “Code Adam”
If a lost child is discovered within the zoo/aquarium, there are several important steps recommended. Have the child with you! Security should be notified immediately. The team member who finds the lost child should ask the child their name and notify Security over the radio saying, “I am with a lost child.” Only first names should be used over the radio. The team member will be expected to remain with the child until security arrives. Staff should not take the child/children anywhere by themselves. The team member should immediately radio for another adult so that two staff members are present at all times.
Rules:

- Never transmit last names over two-way radio.
- Never be alone with a child.
- Never offer food or drink to the child.
- Never pick up or carry the child.
- Only a Security Officer or Senior Staff may release a child to a parent or guardian.

When a parent reports a missing child, we recommend using Plain English emergency calls. Some organizations have chosen to use a specific code name for radio communications, “Code Adam”, which is in-line with its use in department stores, retail malls, hospitals, amusement parks, museums, and supermarkets.

Zoos and aquariums should train their staff to respond via the following steps, whether or not they participate in the Code Adam program:

1. If a visitor reports that a child is missing, obtain a detailed description of the child and what they are wearing. Additionally, all exterior access to the building is locked and monitored; anyone approaching a door is turned away.
2. The employee goes to the nearest in-house telephone and pages a Lost Child (Code Adam), describing the child’s physical features and clothing, especially the kind of shoes the child was last wearing. When Base/Dispatch receives the call they should broadcast a “Lost Child” (Code Adam) on radios and begin a ten minute countdown before notifying law enforcement. As designated employees monitor front entrances, other employees begin looking for the child.
3. If the child is not found within (10) minutes, Base/Dispatch will call law enforcement.
4. If the child is found and appears to have been lost and unharmed, the child is reunited with the searching parent or guardian.
5. If the child is found accompanied by someone other than a parent or legal guardian, reasonable efforts to delay their departure will be used without putting the child, staff, or visitors at risk. Law enforcement will be notified and given details about the person accompanying the child.
6. The Lost Child (Code Adam) page will be canceled after the child is found or law enforcement arrives.

Details are extremely important when locating lost children, and it is important to clearly communicate the following:

- Ethnicity
- Age
- Weight
- Name (first name only)
- Height
- Hair color
- Clothing (hat, shirt, skirt/dress, pants/shorts, coat/jacket/sweater, eye glasses, shoes, etc.), with a detailed description of color and pattern of clothing, and any other distinguishing features

Note: If a child has been taken by someone, the perpetrator may change the appearance of the child by bringing clothes or cutting hair, **but they do not normally bring a change of shoes.**
The recommended procedures for zoo/aquarium staff responding to a Lost Child (Code Adam) are as follows:

- Get details of the separation:
  - Where was the child or parent last seen (near what animal/location)?
  - What was the child wearing?
  - How long have they been separated?
  - Are there medical/behavioral conditions that Security needs to be aware of?
  - Is there a domestic/law enforcement situation that Security needs to be aware of?
- Get help quickly and efficiently by radio, telephone, or in person. If the parent is reporting a missing child, clearly state “I have a Lost Child (Code Adam).” Give the first name and a description of the child.
- Monitor points of entry and egress.
- Base/Dispatch/Security will request or direct available staff to locations requiring coverage.
- In accordance with the Lost Child (Code Adam) procedure, the Police Department will be notified if the child is not located within (10) minutes.

Securing an egress point during a Lost Child incident means that someone is at that location observing the flow of traffic out of the zoo/aquarium. Staff arriving to cover points of egress shall announce that the area has been secured—for example, “this is Security 12, gate B is secured”—which will keep other employees from heading to those areas. Staff securing egress points shall stay at their location until the emergency is called All-Clear.

Staff members should check all guest restrooms immediately. The responsible parties should be defined in the local protocol. Base/Dispatch will request or direct available staff to check all restroom locations.

Check parking lots and play areas. Any available mobilized unit should begin a tour of the parking area and the service road, clearing areas and announcing them as clear.

If the parent or guardian is with zoo/aquarium staff, Security will pick the parent/guardian up and take them to the main exit area to watch for the child. The driver will stay with the parent; this will enable staff to quickly transport the parent to the child when the child is found. If the child has been found, the child will be taken by Security personnel to the Security Office immediately.

Base/Dispatch/Security will request or direct available staff to locations requiring coverage. In accordance with the Lost Child (Code Adam) procedure, the Police Department will be notified if the child is not located within 10 minutes.


**RESPONSE: OTHER EMERGENCY SITUATIONS**

**Fire Emergency**

Every zoo and aquarium should take precautions to prevent fires, to detect fires if they arise, and to safely evacuate fire-affected areas if needed. Designated Safety Coordinators in each
department/area should establish the designated assembly point for each particular work area during the institution’s fire emergency awareness planning/training meetings. Employees should report any fire hazards to their supervisors and/or security. It is the responsibility of each employee to know the location of fire extinguishers, pull stations, and emergency exits in their work areas.

For this example, “Fire Emergency” is the local zoo’s Fire Emergency code.

Initial Observer
- Any staff member detecting smoke or other signs of fire should calmly assess the situation and, if the fire can be easily extinguished in a safe manner without causing alarm or panic to others at the location, take immediate steps to extinguish the fire.
- The Initial Observer should immediately report smoke, other signs of fire, and all fires to Security/Base/Dispatch via radio or phone. They should announce their name, and the nature and the location of the situation, and request confirmation from Base/Dispatch. (e.g., “This is Sherry in Human Resources; I have a Fire Emergency in the mail-room in the Administration Building. Base/Dispatch confirm.”)
- After Base/Dispatch confirms the communication, the Initial Observer should remain on the scene if it is safe to do so, and meet the Incident commander. If the Initial Observer determines that it is unsafe to remain in the building, they should report to the nearest pull station, activate the alarm, and exit the building.
- The Initial Observer should report to the designated assembly area for the location and stand by to provide Fire and Rescue Personnel with information regarding the source of the fire for the duration of the incident and post-fire investigation.

All Staff
- Once a Fire Emergency is announced over the radio, all routine radio traffic must cease in order to keep the radio free for emergency coordination. Only relevant radio transmissions should be aired. Keep all transmissions brief and to the point.
- The first radio responses acknowledging the Fire emergency call should be made by Base/Dispatch, the Incident commander, or the Communication Coordinator. Other necessary responses and acknowledgements should be held until these critical radio calls have been transmitted.
- To avoid causing confusion or delaying Fire and Rescue personnel en route to the location, no one should enter the area without instruction from the Incident commander.

Incident commander
- The Incident commander must announce himself/herself clearly via radio and immediately proceed to the scene in a safe manner to communicate with the Initial Observer and/or the designated Safety Coordinator.
- Designated Safety Coordinators should be department managers or supervisors for the building or area.
- The Incident commander will proceed to the location to assist the safety coordinators in each area with evacuating the affected areas and reporting the information from the scene to Base/Dispatch.
- Staff members should not respond to the location—unless directed to by the Incident commander—until the situation is resolved and the All-Clear is called. Only the Incident commander may make the All-Clear call.
- The Incident commander is the only person who may instruct others to enter the area of the emergency. This will avoid causing confusion or delaying Fire and Rescue personnel en route to the location.
- The Incident commander is responsible for convening all responding staff immediately following the emergency incident resolution to review and evaluate the event and response process, make any recommendations for improvement, and evaluate staff members’ performance as a learning tool.

Base/Dispatch Communications
- Base/Dispatch will facilitate and coordinate communications during the emergency, including required telephone notifications, contact with the Incident commander, directing external
Fire in Buildings

If the fire alarm goes off, staff should immediately proceed to the nearest doorway. If a door feels hot to the touch, find an alternative doorway to use for exit. Base/Dispatch must be notified via phone or radio about the Fire Emergency as soon as possible, and evacuation should take place in a quick but orderly manner.

Base/Dispatch will notify 911 Fire and Rescue, and send security officers to the affected area to assist designated Safety Coordinators with crowd control, securing building entrances, etc. until local fire authorities arrives on the scene.

Once everyone has left the area, employees should assemble in one predetermined “gathering place/assembly area to perform a head count. This will allow the area Safety Coordinator (or “building fire wardens”) or supervisors to check who is there and who might still be missing or in the building. Having one designated area to assemble in will also help emergency crews quickly determine if all employees and guests are present and accounted for at the assembly area. As employees leave the building, staff in charge should check for other employees who may not have heard the alarm. Only staff members who are trained should attempt to extinguish the fire if it is contained. Staff should not jeopardize their safety or the safety of others. As people leave the building, the doors should be left closed and unlocked to facilitate entry by Fire Department personnel. Each Safety Coordinator must account for all personnel working in their area.

Note: Zoos and Aquariums should conduct annual fire drills to test the readiness of employees. All personnel are expected to participate, evacuate their workspaces, and gather at the predetermined location. It is also recommended that Zoos/Aquariums should work in conjunction with local Fire Departments and EMS. (AZA accreditation standard 11.2.7)

New Employees should be given information on fire drills as part of the orientation process.

Fire on Zoo and Aquarium Grounds

If smoke or a fire is detected, Base/Dispatch must be notified immediately that there is a “Fire Emergency” via radio or phone. A staff member may attempt to extinguish the fire if it is contained and they are trained to do so. Everyone must avoid jeopardizing their personal safety or the safety of others. The decision to evacuate all or part of the zoo/aquarium or will be decided by the Incident Commander.

Base/Dispatch will notify 911 Fire and Rescue and send security officers to the affected area to assist the Incident commander and/or designated Safety Coordinators with crowd control, directing guests to exit locations, etc. until local fire authorities arrive on the scene.

Once a decision has been made to evacuate all or part of the zoo/aquarium, Base/Dispatch will announce the decision on radio (e.g., “Channel One” all-call) and give instruction using the PA system. Upon receipt of this directive, the Safety Coordinators in
each area shall implement building evacuation procedures. Safety Coordinators for buildings inside the zoo/aquarium should be department managers or supervisors in each area. In the absence of a manager or supervisor, the lead person in charge will serve as the safety coordinator.

Security personnel and employees should be assigned to assist visitors as they leave the area. It is especially important for employees to remain calm and helpful. Visitors will be understandably concerned and will be influenced by the demeanor of employees. Calm reassurance by employees will help minimize the anxiety level of guests and facilitate a safe and orderly evacuation.

Guidelines for staff during a Fire Emergency:

Fires can be very dangerous to staff, visitors, and the animal collection. The following guidelines should be considered in any fire-related situation:

- Any employee detecting a fire in any building or structure should immediately activate the manual pull station and notify Base/Dispatch that there is a “Fire Emergency”.
- If the fire is small and contained, such as a trashcan fire, staff may attempt to put it out with an appropriate portable extinguisher, but should never jeopardize their own safety.
- If unable to contain the fire, employees must follow the instructions of their safety coordinator and evacuate the building. Staff must go directly to the predetermined gathering location. Before opening doors, touch the door near the top. If it is hot or if smoke can be seen, do not open the door.
- If a fire is discovered on the grounds (grass fires, trashcans, etc.), Base/Dispatch must be notified immediately with the fire’s exact location.
- Security should respond and request the fire department, if necessary.
- No employee or individual should attempt to save personal or zoo/aquarium property at the risk of injury to himself/herself.
- Base/Dispatch must notify other relevant staff including Curators, veterinarians, keepers, aquarists, operations/maintenance personnel, retail personnel, volunteer managers and other Managers of fires and/or evacuation orders.
- Pedestrian traffic must be diverted away from the scene until security or the local fire department arrives.
- Staff should not return to the area until cleared to do so by the appropriate authority (eg the Incident commander).
- All fires, no matter how small, must be reported to Base/Dispatch.

Bomb Threats

Although there is no foolproof means of securing premises against a bomb threat (or bomb attack), a good security plan, correctly executed, will enable organizations to deal with an incident properly. All personnel should become familiar with these Bomb Threat response procedures, especially telephone operators/receptionists, and mail-handling and warehouse personnel. They should remember to respond calmly to any bomb threat call or incident.

Telephone Threats

When a bomb threat is called in:
• The caller should be kept on the line in order to get as much information as possible. Staff should ask for the message to be repeated to confirm it. If possible, the message should be recorded.
• If the caller does not indicate the location of the bomb or the time of possible detonation, ask for this information.
• The caller should be informed that the building or premises is occupied and the detonation of a bomb could result in death or serious injury to many innocent people and animals.
• Particular attention should be given to background noises, which may give a clue as to the location of the caller.
• Staff members receiving the call should listen closely to the voice (male or female), voice quality (calm or excited), accents, and speech impediments.
• During the call if possible, or immediately after the caller hangs up, Security/Base/Dispatch must be notified.

Law enforcement personnel will want to talk with the person who received the call. Making careful note of the caller’s voice, background noise, and specific wording can be very helpful to the following police investigation. See Appendix 4 for an example of a bomb-threat checklist.

Written and Electronic Bomb Threats (E-mail)

While written messages are usually associated with generalized threats and extortion attempts, a written warning of a specific device may occasionally be received. It should never be ignored.

When a written threat or e-mail is received, the procedures listed below are recommended:

• All materials should be saved, including any envelope or container.
• If received via e-mail, the message must not be deleted.
• Once the message is recognized as a bomb threat, further unnecessary handling should be avoided. Every possible effort must be made to retain evidence, such as fingerprints, handwriting or typewriting, paper, and postal marks/e-mail addresses, which are essential to tracing the threat and identifying the writer.

Notify Security/Base/Dispatch immediately and, if known, advise the location, time, description, and means that the person indicated the bomb would detonate.

Suspicious Mail and Packages

A suspicious device may occasionally be received via mail or parcel delivery service, or dropped off. When a suspected mail or package bomb is received, the procedures listed below should be followed:

• IF you see something, say something! Notify Security of the suspicious package immediately.
• Do not open the suspicious article or package. It must be left alone or set down without further or unnecessary handling.
• The area should be evacuated, and the room should be secured if possible.
- Staff must be made aware that the use of hand-held radios, cell phones, or any other electronic devices should stop altogether within the area. These devices may cause or trigger the bomb to detonate.

**Bomb Searches**

Bomb sniffing dogs or bomb detection equipment may not always be available to police. Additionally, police or fire department personnel will often be unfamiliar with the site and will usually seek out assistance from zoo/aquarium personnel to help search for a bomb. The FBI Bomb Data Center has developed the following letter and package bomb indicators and recognition points:

- Excessive postage, excessive weight, and excessive securing materials, such as masking tape or string
- Incorrect titles or titles without names
- Misspellings of common words
- Oily stains or discoloration
- No return address, foreign mail, air mail, and special delivery
- Rigid, lopsided, or an uneven envelope
- Protruding wires or tin foil
- Strange odor
- Restrictive markings, such as “confidential” and “personal”
- Hand-written or poorly typed messages.

**Suspicious Device or Bomb**

A suspicious device or item that may appear to be destructive may be left either as an actual threat or hoax (e.g., pipe bomb, sticks of dynamite, package underneath a vehicle, briefcase with wires, etc.). When this type of item is discovered, the procedures listed below should be followed:

- If you see something, say something! Security should be notified immediately
- Employees should not open the suspicious article or package. It should be left alone or set down without further or unnecessary handling.
- The area should be evacuated, and the room should be secured if possible.
- Staff must be made aware that the use of hand-held radios, cell phones or any other electronic devices should stop altogether within the area. These devices may cause or trigger the bomb to detonate.

**EXAMPLE: Bomb Threat Response Management**

Under most circumstances, due to the difficulty of discriminating a credible threat from a hoax in advance, the response is the same: all threats must be taken seriously and properly addressed.

Upon receiving the information from the Initial Observer, the procedures listed hereafter should be followed:

- The announcement should be made on all radio channels (e.g., “Attention all units: We have a Suspicious package, or device”) and the location. (Example = "Admin. Building,") or "Attention all units. Suspicious Device, Wild Planet Café." or "Attention all units. Suspicious Package, Fjord Conference Room.")
• The threat must be immediately reported to the Police & Fire Department.
• The duties of the Incident commander must be assumed until the staff member is relieved or an All-Clear has been announced.
• The Incident commander must immediately acknowledge the incident via radio and proceed to the scene or nearby area to meet with the Initial Observer.
• Further details and information should be gathered in order to determine the proper level of response, and whether evacuation is necessary. If so, the size and scope should be determined, and a safety perimeter should be established.
• Coordination of responding personnel should begin, and additional staff should be requested if necessary:
  o Evacuation Teams/Fire Safety Team
  o Perimeter Teams
  o Search Teams
  o Media Relations
  o Maintenance
  o EMT
• All responding staff members are under the direction and supervision of the Incident commander until the situation is resolved and the All-Clear is called. Only the Incident commander may make the All-Clear call.
• All other staff should stand by for requests or instruction from the Incident commander.

Base/Dispatch Coordinator
A Security staff member or Operations Manager nearest to the security office should respond to Base/Dispatch. This member should assume the role of Communications Coordinator and follow the procedures listed hereafter:
The following telephone notifications should be made:
• CEO
• Deputy Director
• Director/ Operations
• Media Relations
• Senior Animal Care individual(s)
• Senior Operations/Maintenance individual(s)
Contact should be maintained with the Incident commander to assist in directing external emergency personnel to appropriate areas or access points, etc.

Deciding to Evacuate
• An evacuation of a building, section, or the entire zoo/aquarium may have to take place under the following circumstances:
  • If the caller provides an indication of the location of the bomb, then those departments, buildings, or sections affected by the bomb should be evacuated.
  • If the caller provides no indication of the location of the bomb, but the threat is considered legitimate, then all buildings, sections, and the entire zoo/aquarium may have to be evacuated.
  • If the police, fire department, or other local government authority receives the bomb threat and orders an evacuation of the building, section, or entire zoo/aquarium, then an evacuation should be conducted immediately.
  • If the threat is from a prominent subversive group that has been linked to recent bombings, then an evacuation may be considered regardless of the circumstances.

Evacuations During a Bomb Threat
A serious decision to be made by management in the event of a bomb threat is evacuation or non-evacuation of a building or the entire zoo/aquarium. All persons evacuated from a building/section of the zoo/aquarium should be guided to a safe distance to protect them from debris and other flying objects in the event of an explosion. If the location of the suspected bomb is known, evacuation routes should be determined so as to lead people away from the bomb.
Once the building, section, or entire zoo/aquarium is evacuated, security or other responding personnel should prevent unauthorized access.

**Bomb Searches**

Bomb sniffing dogs or bomb detection equipment may be used by police. Police or fire department personnel may be unfamiliar with the site and will usually seek out assistance from zoo/aquarium personnel to help search for a bomb. Zoo/aquarium leadership should be aware of the following considerations during any bomb search:

- Once the danger zone is determined, the area should be blocked off or barricaded with a clear zone of 300 feet until the object has been removed or disarmed.
- Search teams should be comprised of security, maintenance, or other staff familiar with the building or area. They must be instructed (or trained) to look for suspicious packages or items that appear out of place, and warned not to touch or move anything they might find.
- During a search of the building, a rapid two-way communication system is of utmost importance. This can be established with existing installed telephones.
- Caution: The use of radios or other wireless devices during a search can be dangerous. The radio transmission energy can cause premature detonation of an electric initiator (blasting cap).
- During the search, EMT or other medical personnel should be alerted to stand by in case of an accident caused by the explosion of the device.

**Active Shooter**

An Active Shooter is an individual actively engaged in killing or attempting to kill people in a confined and populated area; in most cases, active shooters use firearms(s) and there is no pattern or method to their selection of victims. Active shooter situations are unpredictable and evolve quickly. Typically, the immediate deployment of law enforcement is required to stop the shooting and mitigate harm to victims. Because active shooter situations are often over within 10 to 15 minutes, and in many cases before law enforcement arrives on the scene, individuals must be prepared both mentally and physically to deal with the situation.

Pre-incident Training: Organizations should use the Incident Command System to train for and respond to this type of incident, as with others. Practice should include: evacuations; first aid; coordination with police and fire departments; crisis communication; reuniting guests, staff, students, etc.; grief counseling; and other applicable topics.

**Example: How to respond when an Active Shooter is in your vicinity**

Quickly determine the most reasonable way to protect your own life. Remember that customers and clients are likely to follow the lead of employees and managers during an active shooter situation.

**RUN – Evacuate the area if there is an accessible escape path.**

Be sure to:
- Have an escape route and plan in mind
- Evacuate regardless of whether others agree to follow
- Leave your belongings behind
- Help others escape, if possible
- Prevent individuals from entering an area where the active shooter may be
- Follow the instructions of any police officers and keep your hands visible
- Do not attempt to move wounded or injured victims
- Call 911 when you are in a safe area.
HIDE - If evacuation is not possible, find a place to hide where an active shooter is less likely to find you.

Be sure to:
- Lock any doors and turn off any lights
- Silence cell phones, pagers or hand-held radios
- Remain quiet and turn off any other source of noise (i.e. radios, televisions, etc.)
- Blockade the door with heavy furniture or equipment
- Seek cover by hiding behind large items (i.e. file cabinets, desks, copy machine, etc.)

FIGHT - Take action against the active shooter.

As a last resort, and only when your life is in imminent danger, attempt to disrupt and/or incapacitate the active shooter by:
- Acting as aggressively as possible against him/her
- Throwing items and improvising weapons
- Yelling
- Committing to your actions
- Fight for your life!
- Organizations should discuss and practice any “fight” methods that will be authorize or used by the organization as a whole

HOW TO RESPOND WHEN LAW ENFORCEMENT ARRIVES

Law enforcement’s purpose is to stop the active shooter as soon as possible. Officers will proceed directly to the area in which the last shots were heard.
- Officers may wear regular patrol uniforms, be in plain clothes or in military style uniforms.
- Officers may shout commands, and be forceful (may push individuals to the ground or even handcuff them for their safety)
- The first officers to arrive to the scene will not stop to help injured persons.
- Once you have reached a safe location or an assembly point, you will likely be held by law enforcement until the situation is under control, and all witnesses have been identified and questioned. Do not leave until law enforcement authorities have instructed you to do so.

WHEN LAW ENFORCEMENT ARRIVES:
- Remain calm, and follow officers’ instructions
- Put down any items in your hands (i.e., bags, jackets)
- Immediately raise hands and spread fingers
- Keep hands visible at all times
- Avoid making quick movements toward officers such as holding on to them for safety
- Avoid pointing, screaming and/or yelling
- Do not stop to ask officers for help or direction when evacuating, just proceed in the direction from which officers are entering the premises

MANAGEMENT ACTIONS DURING AN ACTIVE SHOOTER SITUATION

Employees and customers are likely to follow the lead of managers during an emergency situation. During an emergency, managers should be familiar with their protocols, and be prepared to:
- Take immediate action
- Remain calm
- Facilitate Run, Hide, Fight actions
- Lock and barricade doors
- Evacuate staff and customers via a preplanned evacuation route to a safe area

RECOVERY
After the initial response of Run Hide Fight, the organization should be prepared to coordinate or help outside agencies coordinate a recovery. The priority of recovery should be:

- Setting up a command location
- Help injured victims
- Liaising with incoming outside agencies
- Connecting with “Runner” and “Hiders”
- Making arrangements and clearing the way for additional responders
- Implementing your crisis communication plan
- Gathering information
- Communication with staff, Boards, volunteers, etc.

Natural Gas Leak

A gas leak refers to a leak of natural gas, from a pipe or other containment, into a living-area or any other area where gas should not be. NATURAL GAS IS EXTREMELY FLAMMABLE. Leaking gas can cause an explosion and fire. Natural gas vapors may also cause dizziness or asphyxiation. Natural gas is odorless and colorless, so odorants are added to make it easier to detect. For this example, a “Natural Gas Leak” is called on radio.

General Guidelines

Natural gas can explode when exposed to flame or sparks, so it is important to report any suspected gas leaks immediately to the institution’s security team. If a natural gas smell is detected, electrical switches should not be turned on or off. Staff should not attempt to use telephones or cellphones inside the building or outdoors, if they are near the area of the possible leak, because sparks from these devices can cause natural gas vapors to explode. Any potential ignition sources or open flames should not be used near the area. Staff members should use common sense, and never take risks that may endanger themselves or others. If indoors, all staff members should leave the area/building quickly by the fastest possible route. Staff should not return to the area/building unless advised to do so by the Fire Department or security personnel.

EXAMPLE: Emergency Procedures for gas leak

Staff and all zoo/aquarium employees must follow the emergency procedures listed below whenever a natural gas leak or a flammable material spill is suspected or observed. All incidents should be reported regardless of intensity of odor or size of spill.

Initial Observer and Zoo/Aquarium Staff

- Staff should leave the area, gathering volunteers, visitors and other departmental staff to leave with them.
- If available, team members should sound the fire alarm.
- The building/area should be evacuated immediately via the shortest and safest exit route.
- All staff members are advised to go to a safe area or to the pre-assigned exterior assembly area for their building, and to take visitors, volunteers and other departmental staff with them.
- Security must be contacted via radio or phone.
- When notifying Security or Base/Dispatch, the magnitude of the leak, the location or buildings affected, and source must be described in detail. (e.g., “This is Dave in the Maintenance Building; we have a “Natural Gas Leak” near the fabrication shop. Base/Dispatch confirm.”)
- Staff should await emergency response personnel at a safe location.
- If anyone suspects that someone is missing or trapped, emergency personnel should be contacted from outside the building.
- Any staff member trapped inside a building during a gas leak/emergency should close all doors between their location and the gas leak, and stuff the cracks around the doors. They should then wait at a safe window and signal/call for help.
Incident commander
The following procedures should be adhered to:

- The Incident commander must immediately acknowledge the incident via radio and proceed to the scene or nearby area to meet with the Initial Reporting Person or Observer.
- Further details and information should be gathered in order to determine the proper level of response and whether evacuation is necessary. If so, size and scope should be determined and a safety perimeter should be established.
- Any command post or evacuation area should be upwind. Safety perimeters should take into account any bystanders or vehicles.
- Coordination of responding personnel should begin, and additional staff should be requested if necessary.
- All responding staff members should be under the direction and supervision of the Incident commander until the situation is resolved and the All-Clear is called. Only the Incident commander may make the All-Clear call.
- All other staff should stand by for requests or instruction from the Incident commander.
- No one should enter the area of the gas leak without the instruction of the Incident commander.
- The Incident commander should give regular updates on the status of the threat, evacuations or location of device, as well as requests for additional personnel, resources, etc.
- The Incident commander is responsible for convening all responding staff immediately following the “Natural Gas Leak emergency” resolution to review and evaluate the event and response process, make any recommendations for improvement, and evaluate staff members’ performance as a learning tool.

Base/Dispatch
Upon receiving the information from the Initial Observer, the procedures listed hereafter should be followed:

- Base/Dispatch should broadcast “Natural Gas leak” and the location on radio channels.
- The threat must be reported immediately to the Police & Fire Department. The zoo/aquarium’s maintenance department should also be notified.
- Maintenance and zoo/aquarium Security personnel should respond to determine if evacuation is necessary and establish a safe perimeter around the building or leak source.
- The gas company should be notified as soon as possible (either by Security’s Base/Dispatcher or maintenance staff) after consulting with the Maintenance Manager.
- Security personnel should assist in diverting pedestrians and vehicles from the area.
- The CEO, Deputy Director, SVP of Operations, and Public Relations should be notified by telephone.
- Contact should be maintained with the Incident commander to assist in directing external emergency personnel to appropriate areas, access points, etc.

Severe Weather
Severe weather is defined as any weather condition, which can pose a threat to life or property. These threats include thunderstorms, tornadoes, hurricanes, snowstorms, lightning, and hail. In the event of severe weather conditions, local security should broadcast an alert and closely monitor the weather. Zoos and aquariums on the notification list of the Emergency Management Office (EMO) for their city/county will be notified of any severe weather threat; individual staff members can be on these local weather notification systems.

EXAMPLE: the following is provided to assist in the development of an effective crisis response protocol during severe weather conditions.

When placed under a storm watch like a tornado or thunderstorm, Base/Dispatch should broadcast a warning, “Severe Weather,” on all channels as a precaution. Base/Dispatch should closely
monitor the weather and continuously update all areas of changing conditions using the following definitions:

- **Severe Thunderstorm Watch** means severe thunderstorms are possible in the area. Remain alert for approaching storms and continue to monitor radio updates.
- **Severe Thunderstorm Warning** means severe thunderstorms are coming to the area or are indicated by weather radar. Severe thunderstorms may bring damaging winds, flooding rains, hail, and lightning. In the event that a thunderstorm warning is issued, staff should be advised to:
  - Stay calm and stay away from windows and doors during the storm.
  - Stay away from any large trees or metal objects if lightning is present. Lightning poses one of the greatest thunderstorm risks.
  - Seek shelter, and remain there until the threat is over.
  - Report any damage to security as soon as possible.
- **Tornado Watch** means that tornados are possible, but there is no immediate danger. It is important to remain alert for approaching storms. Tornadoes occasionally develop in areas where a severe thunderstorm warning is in effect. Base/Dispatch will closely monitor the weather and continuously update all areas of changing conditions. Staff must remain alert to signs of an approaching tornado and seek shelter if the skies become threatening.
- **Tornado Warning** means a tornado has been sighted or indicated by weather radar. Danger exists in these situations, and staff members should move to a safe place.

**All Staff**

Once a Severe Weather tornado warning is announced over the radio and PA system, all routine radio traffic should cease in order to keep the radio free for the incident commander and Base/Dispatch. Only relevant radio transmissions should be aired. Transmissions must be kept brief and to the point.

- Upon receiving information that dangerous weather has been spotted, staff should remain on the appropriate zoo/aquarium channel and monitor the situation. Radio traffic should be held to a minimum.
- All staff should seek shelter in designated areas or safe zones. Employees are encouraged to exercise good judgment in seeking shelter.
- All staff should seek areas away from outside doors, windows, etc. Center hallways—and in some cases, restrooms—will provide a safe environment. Seeking shelter in furnace rooms, rooms with electrical panels, or rooms where hazardous materials are stored is discouraged.
- When special-needs groups are on the grounds, zoo/aquarium Security must be alerted to their needs in the event of dangerous weather and assist them to a designated shelter.
- If program participants or special guests are on grounds, staff should immediately escort these guests to the nearest safe shelter or building.
- Employees assigned to work in non-permanent structures such as ice cream carts and guard shacks should seek safe shelter in the closest designated safe zone or permanent building.

**Incident commander**

- The Incident commander must announce themselves immediately proceed to Base/Dispatch to assist with coordinating the movement of guests and staff to the nearest designated shelter.
- The Incident commander should give regular updates to the Communication Coordinator on the status of dangerous weather. Only the Incident commander may make the All-Clear call when it is safe to do so.
- The Incident commander is responsible for convening all responding staff immediately following the Severe Weather tornado warning resolution to review and evaluate the event and response process, make any recommendations for improvement, and evaluate staff members’ performance as a learning tool.
SECTION FOUR: RECOVERY

STRUCTURING FOR RECOVERY

An emergency incident that destroys infrastructure or in any way disrupts cash flow or management capabilities can have devastating financial effects on managed wildlife facilities. Just as keepers, aquarists, and security employees must plan their responses to a range of possible animal, human, or weather-related incidents, an organization’s management team must employ practices that will allow the organization to quickly recover from a range of incidents and major disasters. These practices may include adapting the zoo’s or aquarium’s management culture to make the organization more resilient to potential physical, financial, personnel, and public relations crises, and making sure that the organization has the institutional knowledge to embark on a long-term recovery process after a major disaster.

Basic information about how FEMA can assist in a disaster and its eligibility requirements for federalizing a disaster-response should be known by all managed wildlife facilities. These activities can be quite detailed, and e-links to appropriate FEMA sites are given here on a subject-by-subject basis. For more information on qualifications or coverage through FEMA, visit: http://www.fema.gov/public-assistance-local-state-tribal-and-non-profit, or: http://www.fema.gov/grants

Assemble a Business Recovery Team

Management should identify key personnel, board members, and partners to become a Business Recovery Team. This team would be responsible for leading the direction of recovery efforts. The team’s plan for recovery should be developed based upon the goals attainable after a disaster. Business continuity is extremely important to the success of a Health and Safety Program. FEMA’s “Are You Ready?” document is an excellent resource, and is available online: http://www.fema.gov/pdf/areyouready/areyouready_full.pdf

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a type of insurance available to both private individuals and municipalities in a specially designated flood area. Local Emergency Management can provide assistance in determining whether flood risk from any source should be part of the list of hazards developed during the facility’s Risk Assessment. To estimate the location of floodplains and search for floodplain maps by address, visit http://msc.fema.gov. More information on NFIP can be found at: http://www.fema.gov/plan/prevent/floodplain/index.shtm
APPENDICES
**DISCLAIMER: SAFETY CHECKLISTS AND QUALITY ASSURANCE GUIDES**

To help maintain high levels of health and safety, zoos and aquariums may use a number of forms, checklists, and quality assurance guides. The following are examples of safety forms and checklists that can be used within a zoo or aquarium to promote and maintain a high level of security and health throughout the organization. However, these forms are *samples only*. As with any other form in this document, they should be reviewed by the facility’s safety committee, possibly legal staff and other staff prior to use, and facility-specific issues should be addressed.

**AZA Safety Example Practices Disclaimer:** The materials contained herein were developed as examples of practices that may be used to promote and maintain safety and security in zoos and aquariums. These materials are not standards, specifications, or regulations and create no new legal obligations. They do not replace or override any applicable federal, state or local laws, regulations or ordinances. The facility’s safety committee, management and legal staff should review the materials in light of site-specific conditions and requirements.

These materials are advisory in nature, informational in content, and intended to assist facilities in providing a safe and healthful environment. Each facility must review the information taking into account the specifics of its facility. This document may not address all of the safety concerns for a specific facility. It is the responsibility of each facility through the application of technical judgment and experience to determine the appropriate procedures for that facility.
APPENDIX 1: NATIONAL SURVEY ANIMAL ESCAPE INCIDENTS AND RESPONSES

Example PRACTICES – ANIMAL ESCAPES:
Managing Animal Emergencies and Escapes

**Background:** In late 2012 and early 2013, the Dangerous Animal Escapes Subcommittee, under the guidance of the Association of Zoos and Aquariums’ Safety Committee, undertook a study to summarize example guidelines and procedures used by AZA-member zoos and aquariums related to the escapes of dangerous animals. Electronic surveys were sent out to a sampling of 81 AZA zoos and aquariums. They were categorized by the facility’s annual operating budget: small ($4.9M or less), medium ($5M to $19.9M) or large ($20M or more). 63 (77.8%) institutions completed the survey and also submitted their Animal Escape Guidelines, which were reviewed by the eight-member subcommittee. The data were collected and documented in a format that allowed them to be reviewed in aggregate or subdivided based on the institution’s size and by facility type (i.e., zoo or aquarium): Escapes Subcommittee Survey Tracking Sheet.

**Dangerous Animal Escape Response and Use of Firearms for Event Resolution**

Each AZA organization should have a clear plan that directs incident commanders, firearms teams and immobilization teams on how to proceed during a dangerous animal escape, including the decision on when to shoot or not to shoot.

Dangerous animal escape guidelines should outline:

- the overarching goal to resolve an escape situation,
- the chain of command, and
- the authority for decision making.

Responsibility for determining the use of chemical immobilization, the decision to shoot or not to shoot and the need to notify local authorities must be clearly delineated and be assigned to those with expertise and training in the recapture of an animal.

A dangerous animal escape is a crisis that will evolve rapidly and organically. Employees who have a clear vision of the ultimate goal, as well as the authority to make decisions, will be capable of responding quickly and efficiently to the incident.

Safety of human life must be the guiding goal for the resolution of all dangerous animal escapes (or animal attack), and any tactic used to resolve the situation must be geared toward attaining that objective.

Decision-making authority should be clearly designated in the plan, and the plan should include a clear statement showing institutional support of the decisions made, given they are consistent with good judgment and adherence to institutional goals. Firearms teams should be responsible for determining when to shoot or not shoot in an emergency involving a dangerous animal.
Results of the 2012 Escapes Survey show that 44 out of 52 zoo respondents permit firearms-trained persons to make on-site shoot/no shoot decisions. 48 out of 52 zoos indicated the plan clearly defined when a situation warranted lethal force. In addition, 59 out of 61 zoos and aquariums indicated they have a specified chain of command for decision-making during an escape. Local Chains of Command can be clarified during emergencies through the use of an Incident Command System, as described elsewhere in this document.

**Use of the Incident Command System During Animal Escapes.**

Each AZA organization should be trained in and use the Incident Command System (ICS) for all emergency events, such as a dangerous animal escape.

ICS is a proven method to manage all types of hazards and emergencies. It was developed in the 1970s to address catastrophic fires and, after September 11, 2001, its use was mandated by the federal government for first responders. Other agencies, such as schools, hospitals and large amusement venues, also adopted ICS for incident management.

The Incident Command System is a standardized, on-scene, all-hazards incident management approach that is used by all levels of government. It enables a coordinated response among various jurisdictions and agencies. It also establishes common processes for planning and managing resources that allows for the integration of facilities, equipment, personnel, procedures and communications operating within a common organizational structure.

The ICS effectively recognizes that during the initial phase of an emergency, people are acting somewhat independently to resolve the crisis, and that system must continually evolve. The system may be small and informal in this beginning phase, but is scalable based on the emergency and the skills and resources needed to resolve it. As an incident ramps up, ICS is a formal process to hand off leadership to someone with more qualifications and experience.

- [Fresno Chaffee Zoo - Weekly ICS Roster Sample](#)
- [Akron Zoo - ICS Structure Animal Escape](#)
- [Cheyenne Mountain Zoo - ICS Flowchart](#)

The largest events are Type 1 events. They would be something like 9/11. The smallest size events are Type 5 events. These are events that can be solved in one operational period by just a handful of people. This is something like a minor guest injury or the escape of a tortoise. All events fall somewhere on this list between a Type 1 and Type 5. The official descriptions written by the Federal Emergency Management Agency (FEMA) can be found here: [http://www.training.fema.gov/EMIWeb/IS/ICSResource/assets/IncidentTypes.pdf](http://www.training.fema.gov/EMIWeb/IS/ICSResource/assets/IncidentTypes.pdf).

There are two factors that often confuse zoo and Aquarium professionals as they explore the use of the ICS. First, most zoo and aquarium emergencies are solved during one operational period. Therefore,
according to the Type 1 to Type 5 descriptions, these incidents never really scale up. In these situations, there may not be value in naming a planning person/division, a logistics person/division or a finance person/division. However, there is value in a PR person/division and an operations person/division. Most zoo and aquarium work in single-day emergencies is operational in nature, so it is perfectly fine that the other divisions are not activated.

The second area of confusion is that of control over decision-making. Without a true understanding of the system, the animal staff might believe that the director or other person would be making decisions for them, which would make them feel uncomfortable. The reality is that the Incident Commander (IC), while in charge, is not making every operational decision. In a large event, the IC’s decisions are mainly strategic in nature (“Shoot the tiger on sight,” “Immobilize the bear as long as there is secondary containment,” “Evacuate the Zoo or shelter people in place,” etc.) In the IC system, the Incident Commander is “managing by objectives” as the event grows larger. Contrast this with managing tasks, as is the case in a small Type 5 emergency where there are only a few resources on scene. Therefore, if we use the system correctly, non-animal people will not be making small-scale, operational animal decisions.

In the 2012 Escapes Survey, 41 out of 61 zoos and aquariums report that they use the Incident Command System for animal escapes. However, in a comprehensive review of 10 of the facilities that completed the survey, four of 10 (40%) indicated they did not use ICS, five of 10 (50%) said they use ICS but there was no mention of ICS or “Incident Commander” in the crisis plan submitted to the subcommittee. Only one of 10 (10%) said they use ICS and evidence of it existed in their plan. The use of ICS could be made clearer with a good plan and program.

The benefit of zoos and aquariums using ICS is that staff and first responders are using the same language and operating in a similar manner. This will allow staff to be more involved in the outcome of the incident.

One common-sense goal of using ICS is to have zoo or aquarium staff invited into the integrated command post as the event grows into a multi-jurisdictional situation. That is most likely to happen if you speak the ICS language and know the process. Situations where this might come into play could be an animal escape emergency or an area-wide electrical outage caused by a huge winter storm, for example. Those decision makers will be using ICS, and being invited into the system as a “zoo advisor” will allow your concerns to be more quickly addressed.

Training and certifications can be found on the FEMA online training website: https://training.fema.gov/IS/NIMS.aspx. You can also visit the main FEMA website for more information: http://www.fema.gov/incident-command-system.

Implementation of Communication Plan

Each AZA organization should have a written Crisis Communication Plan that addresses the core values related to communicating the institution’s message, pre-event planning, media training and post-event organization of messaging.
A written Crisis Communication Plan should contain principles and guidelines to lead employees. The plan should provide an honest portrayal of the organization as competent, concerned and willing to devote resources to resolve the situation quickly and appropriately.

**Crisis Communication Plan Principles**

- Provide information and cooperate with those investigating the incident in order to appropriately inform them about how the crisis or event is managed and resolved. Withholding information may force the media and others to obtain information from unreliable or misinformed sources. “No comment” statements or silence may imply your institution has something to hide.
- Be honest and truthful in all communications.
- Maximize communication by providing:
  - the right information
  - to the right people
  - at the right time
  - …so the right decisions can be made.

**Crisis Communication Plan Guidelines**

**Emergency Preparedness Pre-Planning**

- Determine how employees will be kept informed during the crisis or situation. Depending on the type, length and sensitivity of the crisis, this can take a variety of forms.
- Discuss potential crises to determine communication responses for the best and worst case scenarios.
- Identify what equipment will be needed (e.g. table, laptop, notepads, extension cords, electric supply, etc.)
- Anticipate media responding to information they read on social media sites such as Twitter, Facebook, etc.
- Identify stakeholders that may be affected by the crisis or want information; this includes government officials, Board of Directors, employees, neighbors, news media, AZA.
- Designate a Crisis Communication Team comprised of individuals capable of managing communication internally and externally. Subject-specific, public relations, human resources and legal experts may be included on the team.
- Designate a single point of contact or Public Information Officer that reports to the Incident Commander. This person should not be directly involved in resolving the crisis, but rather someone that is familiar with working with the media on a regular basis and is capable of activating the Crisis Communication Plan.
- Back-up personnel with similar skills or training should be identified to cover when the Crisis Communications Coordinator/Public Information Officer is not available. 60 out of 63 respondents to the 2012 Escapes Survey indicated they have a trained public relations person. When asked “Is the plan clear regarding who is allowed to speak to the media/public?”, 53 out of 62 respondents indicated the Zoo or Aquarium Director was
one designated person. As well, 42 of 60 stated it could also be another spokesperson. It seems clear from these data two things are at work. First, at some organizations, it may make sense to have the Director speak, as they may be the most qualified PR person. Second, even if they are not the most qualified PR person, the public may look to a figurehead to speak about such a serious incident.

- Provide spokesperson training that focuses on preparation and optimizing a response for those designated to speak on behalf of the organization.
- Provide ongoing crisis communication training for front-line staff that incorporates working with the media, location of staging areas, managing sight line visibility at the scene, and reporting what they are hearing and seeing from the public and stakeholders. Senior and mid-level managers should be provided advanced training on the Crisis Plan, as well as on procedures for communicating with the media and those investigating the incident.
- Establish a notification system to reach stakeholders during a crisis. Multiple modes should be considered in order to optimize communication (e.g. cell phones, email, text messaging, web page, etc.).
- Establish systems to gather intelligence via social media, traditional media and stakeholders. Monitoring feedback from these sites/persons will facilitate the communication strategy and response.
- Develop talking points for use immediately after a crisis breaks. Messages can be prepared in advance that address a variety of scenarios.
- Designate areas for media staging. Typically these areas are away from the Command Center and crisis/event.

Post-Event Procedures

- Consider a press release related to decisions about the incident and/or the outcome/result of the incident. If appropriate, expressions of gratitude to employees, first responders and the community should be made as soon as possible.
- Update stakeholders to keep them informed of the progress/outcome of the event.
- Consider taking photographs of the scene and, if the situation warrants, make arrangements for the media to be escorted to the site.
- Consider making a file containing media clippings, photographs, social media communication and any other information related to the incident in a timely fashion.
- Analyze the effectiveness of the communication plan: what went right, what went wrong, how things could be improved and what was learned.

Personnel that Make Up Teams or Groups

All AZA organizations should have individuals trained in key areas to respond to animal escapes.

Pre-event planning and training should include preparing the following teams where applicable for various institutions.
**Immobilization Teams:** In the survey, several questions were asked about immobilization teams.

- **Onsite:** 47 of 50 zoos reported having on-site immobilization capabilities sufficient to deal with the escape of any animal in the collection. 41 of 52 zoos said they have an immobilization team on-site during operating hours, while 37 of 53 reported having a team on-site after hours or having a plan in place for when staff is not there.
- **Training:** 47 of 51 zoos reported that training is done by the veterinary department, while 11 of 50 reported that they use an outside vendor for training.
- **Team Composition:** Immobilization teams are made up of both veterinary and non-veterinary staff. 30 of 53 zoos reported using the veterinary staff and other qualified staff on their immobilization team. “Other qualified staff” was, in most cases, members of animal management.

**Firearms Teams:**

- **In-house Teams:** In-house teams make up the majority of the firearms teams used by zoos. 47 out of 53 zoos reported that they have employees trained in the use of firearms. 41 of 51 zoos said they are required to have firearms coverage on-site during operating hours, and 32 of 52 said there is firearms coverage on-site after hours or they have a firearms plan for after hours.
- **Experience:** The experience of these teams varies from zoo to zoo. For example, of the approximately 53 zoo survey respondents, 41 teams have members with hunting experience, 20 have members with law enforcement experience, 22 have members with military experience, 11 have members that are NRA trained and certified, and 32 have members with experience in dispatching live animals.

**Incident Command Teams:** See Incident Command explanations above.

**Other Teams:** Beyond these normally noted positions, it is important to think about having personnel trained in public relations, crowd control, capture techniques, evacuation procedures, equipment operations and any other categories that will need to be immediately deployed and put to work.

**After-Hours Response Planning**

Each AZA organization should outline procedures for communication necessary to begin implementation of the animal escape/human interaction response plan during both business hours and non-business hours, as well as when there are full emergency response teams on grounds and when there are not.

Each AZA organization should be able to respond to an emergency situation regardless of the time of day or night and have an adequate number of employees able to respond. Response mobilization plans should always include information on how to initiate the emergency event response, how pertinent team members are notified of the emergency, who is in charge (Incident Commander), what teams are needed to respond to the event (the firearms team, recapture team, and/or the immobilization team), and what essential functions will be needed.
In the AZA survey, 62 of the 63 respondents stated they have a written animal escape plan in place. As well, only 55 of 62 respondents stated they have a specific “after-hours” plan.

**Definition of Dangerous and Non-Dangerous Animals**

Each AZA organization should have a clear definition or list of animals that are classified as dangerous, which would necessitate the deployment and involvement of an emergency firearms team.

A clear, unambiguous definition of dangerous animals by species or by individuals allows emergency firearms team members to quickly secure weapons and deploy to the site. If dangerous animals are not clearly defined, the result may be indecision, confusion and time delays among those responding.

**Protocols for Non-Dangerous Animals**

Each AZA organization should have a clear protocol for the recapture of animals that may not require the use of deadly force to resolve the escape event.

As noted earlier, safety of human life must be the overarching goal for any dangerous animal escape. The myriad of species that fall in this category make establishing a general, effective protocol nearly impossible. While some escapes can easily be handled by one trained individual without supervision or assistance, others can involve the use of immobilization or recapture teams and require a great deal of coordination and possible closure of zoo perimeter gates.

Regardless of the species, suitable capture equipment appropriate for that species should be close by, in good condition, working properly and available to appropriately trained staff in designated areas throughout the facility.

General protocols for dealing with an animal escape include the following actions:

- Alert necessary staff that an animal has escaped
  - Provide appropriate information as to the species, sex, number of animals, location (if known), whether the animal is contained and any other pertinent information.
- Determine the level of response that will be needed.
  - Mobilize the recapture and immobilization teams (if necessary).
  - Determine what level of incident command will be necessary to oversee the resolution of the situation.
- Identify what equipment will be needed.
- Make sure the staff and animal are safe.
- Determine methods to contain the animal or minimize its movements.

**Protocols for Dangerous Animals**

Each AZA organization should have a clear protocol for animals that may require the use of deadly force to resolve an escape event.
As noted earlier, safety of human life must be the overarching goal for any dangerous animal escape. Firearms, recapture and immobilization teams must understand that human safety is the primary desired outcome, and any decision(s) made to resolve the situation (whether it be to destroy the animal or attempt to recapture it) must be geared toward attaining that objective.

The specific protocols for dealing with a dangerous animal escape will vary by institution but, at a minimum, should always include the following actions:

- Determine what level of the Incident Command System will be necessary to oversee the resolution of the situation.
- Assure the safety of all people on grounds using tools such as crowd control and shelter-in-place safe houses.
- Initiate a lock-down of the facility, if necessary.
- Alert staff that an animal has escaped.
  - Provide appropriate information as to species, sex, number of animals, location (if known), whether the animal is contained and any other pertinent information.
- Rapidly mobilize the firearms, recapture and immobilization teams (or emergency response team).
- Identify what equipment will be needed or available.
- Determine and implement methods to contain the animal or minimize its movements.
- Determine effective means of communicating events to staff throughout the zoo or aquarium and to outside agencies (e.g. police or rescue squads).
- Keep employees who are not essential to the resolution of the escape away from the area.

59 out of 61 zoos and aquariums (97%) that responded to the survey indicated they have a specified chain of command for animal escape events. Regardless of the person’s title, the individual responsible for making decisions to resolve the situation must have the knowledge, expertise and training to handle an animal escape. We strongly recommend that this person be trained in ICS.

48 out of 52 zoos (92%) indicated that their plan clearly defines when an animal escape warrants the use of lethal force, and 44 out of 52 zoos (85%) permit emergency response team members to make on-site decisions whether or not to destroy an animal. Use of Pepper Spray, pepper spray bullets, bean bag bullets and rubber bullets can provide effective, non-lethal deterrents. At least one zoo uses at least one of these deterrents to chase wild bears away from public areas!

Non-lethal Control Equipment and Resources

Response teams should be trained in the use of non-lethal means to distract, recapture or restrain an animal without chemical immobilization or deadly force.

Additional means of recapture, distraction or restraint should be identified in the plan as non-lethal tools to resolve an emergency involving a dangerous animal. These could include CO₂ fire extinguishers,
pepper spray, fog horns, fire hoses and other aversives, which could be used to push animals back or hold them at bay. Food treats may be used to attract or move animals to a more desirable location during the recapture process. Personal protective equipment for employees to respond to dangerous (and non-dangerous) animals should also be stored in locations that make them accessible (e.g. bite gloves, approach vehicles, etc.) Recapture equipment like nets, push boards, tarps, net guns and other tools should also be purchased and stored for use.

**Immobilization Equipment, Resources and Immobilization Team Training**

Response teams (whether internal or external) should have an understanding of what animals are on grounds and have the appropriate immobilization equipment and drugs available to safely sedate all animals in the collection.

Equipment for the remote injection of immobilizing agents must be available for the use of these agents during routine veterinary care. AZA accreditation standard 2.3.1. requires that “Capture equipment must be in good working order and available to authorized, trained personnel at all times.”

It is important to consider the variables involved in the use of remote injection equipment for immobilizing animals that have escaped their normal enclosures. Animals that are outside their normal enclosures may be excited due to a variety of circumstances, including unfamiliarity with their surroundings, pursuit by staff or other behavioral issues. Veterinary staff must develop immobilization plans that account for differences in agents and dosages that may be required in an escape situation. The equipment for dart delivery must also accommodate the distances that may be required in an escape situation.

AZA accreditation standard 2.2.1. states “Written, formal procedures must be available to the animal care staff for the use of animal drugs for veterinary purposes, and appropriate security of the drugs must be provided. Explanation: Such procedures should include at minimum the following: those persons authorized to administer animal drugs, situations in which they are to be utilized, location of animal drugs and those persons with access to them, and emergency procedures in the event of accidental human exposure. ....”

Each AZA organization that has dangerous animals as part of their collection should have a formal relationship with an internal chemical immobilization team that is trained and qualified in the specifics of safely immobilizing dangerous animals at their facility.

The response to any animal emergency requires specialized personnel and equipment. A documented training method to promote safe, ethical and responsible immobilization should be used for in-house immobilization teams.

In the AZA survey, 47 of 50 zoo respondents stated they have on-site animal immobilization capabilities sufficient to deal with the escape of any animal in their collection, and these trained employees are trained predominantly by the veterinary staff (47 out of 51 zoo respondents). However, 11 of the zoo respondents also use an outside company to train their staff. Of the surveyed zoos, 41 out of 53 respondents stated their immobilization teams receive regular dart practice at a range or live-fire location.
Most of the respondents enumerated that they conducted dart training at least once or twice a year.

**Firearms Resources**

Response teams (in-house or outside police response) should have an understanding of what animals are on grounds and have the appropriate firearms available to safely dispatch all dangerous animals in the collection, without endangering the public.

In this day of “active shooters,” team members should be easily recognized as a member of the firearms team (e.g. vest, arm band, etc.). With this key element in place and training addressed below, the main focus of this section will be equipment selection.

In zoos and aquariums, we should be able to effectively resolve a situation where a dangerous animal has escaped or is threatening human life. In the spirit of this, most of the animals we would consider using lethal force on would be larger and more dangerous. A caliber of .30 or larger is recommended for these types of animals.

40 of 51 survey respondents reported having a high-powered rifle in their gun safe. It is important to remember that, while these may be extremely effective, local and state regulations may not allow a high-powered rifle to be shot within the jurisdictional boundaries. In these and other cases, shotguns of at least 12-gauge are recommended. 47 of 51 survey respondents reported keeping shotguns on site. Further analysis of the data show that the vast majority of these were 12-gauge. There can, of course, be situations when smaller calibers are adequate. In the AZA survey, 55 of 59 respondents reported that their firearms were selected based on their species list, and 36 of 50 zoos reported having a 30 caliber or larger.

9 of 51 zoo respondents reported having handguns on site for animal escapes. Combining that number with the fact that 7 respondents reported that law enforcement and security personnel were the only ones who would respond to these events, it is likely that the majority of the handguns used for this purpose are carried by law enforcement or security personnel. Handguns are inherently less accurate and less powerful than many of the .30-caliber rifle or 12-gauge shotguns in use at most zoos. However, there may be times when an organization has a specific need that makes a handgun the right tool for them.

There are as many types of ammunition as there are ways to use a firearm. Three of the most common types are hollow points, jacket hollow points and solids. While hollow points are most often found in handguns, some shotgun slugs use this model of projectile (bullet). The most common type of shotgun ammunition for our purposes will be some type of buckshot, normally 00 buck, or some type of solid slug, normally 1oz.

Most rifle projectiles (bullets) will fall into two main categories: a jacketed lead core bullet or a solid. Jacketed bullets should be from a trusted manufacturer designed for the type of animals it will be used on. For example, some jacketed bullets are better suited to fragment upon impact in thin-skinned animals, and some are better suited to penetrate heavy bone and skin before expanding. The second type of bullet, a solid, is designed to stay whole and fragment very little, if at all. These are best-suited for strong-boned
and thick-skinned animals like elephants, rhinos, hippos and the like. There are cheap, target-practice solids and well-designed hunting solids. Be aware of the differences and select wisely. In addition to caliber, bullet type and manufacturer, there is one final consideration: the weight of the bullet. Many manufacturers have pre-selected the most common and effective weights of the caliber. One should consider the fact that in smaller calibers, a heavier bullet may provide more kinetic energy. There will be trade-offs with every selection.

Safe and thoughtful decisions regarding how and where to store firearms is another consideration. In our survey, 36 of the 50 responding zoos had firearms stored in multiple locations, and 14 had them stored in one location. Beyond how many locations, the plan should consider how they are stored and protected, and if they are appropriately accessible at necessary emergency times. Given that many escapes never extend beyond a protected back area, having firearms in the tiger building, for example, may prove problematic in such an event.

Firearms are tools that can also be used in nontraditional ways to help in animal emergencies. Use of rubber bullets, bean bag bullets and pepper spray bullets can provide effective, non-lethal deterrents. At least one zoo uses these to chase wild bears away from public areas.

**Qualifications and Training for Firearms Teams**

**Firearms Team Training** *(See AZA accreditation standard 11.6.3)*

Stored firearms must be in a locked cabinet of sufficient construction and design to impede unauthorized entry, and located in a secure area and accessible only to authorized personnel trained in their use.

Explanation: Personnel authorized to utilize firearms should have professional training and regular practice.

All AZA organizations that have dangerous animals as part of their collection should have a formal relationship with an available firearms team, either internal or external to the organization, that is trained and qualified in the specifics of safely dispatching dangerous animals at their facility.

The response to any animal emergency requires specialized personnel and equipment. It is important to store and transport firearms using all safety rules and state laws pertaining to firearms. Proper insurance coverage should also be carried on all firearms team members. A documented training method to promote safe, ethical and responsible firearm usage must be used for in-house firearms teams. In the AZA survey, 46 of 48 zoo respondents stated they have specific qualifications for firearms-trained employees. The majority of our organizations use in-house personnel to man these teams. Of the 52 zoo respondents, only four solely use outside law enforcement as their firearms team. The majority uses a mix of in-house departments to fill the team; 10 use animal personnel only, six use managers only, three use on-site security only and 35 use personnel from a mix of departments.

**Firearms Range Training**

Each AZA organization should have a designated point person responsible for training, coordination, and documentation of the firearms team members.
A process should also be in place to document each team member’s annual proficiency and live-fire qualifications.

If the team is an off-site firearms team, like a local sheriff’s office, the facility’s designated point person is responsible for discussing the site, the animals and the appropriate weapon selection with the off-site team before any incident. Firearms team members must be able to respond appropriately to a dangerous animal escape. Therefore, each firearms team member must be familiar with the firearms they will be required to use during an escape event. The range training should be relevant and realistic to the organization's dangerous animal collection. Training should cover realistic situations (e.g. night/dusk/fog settings, different weapons, full-sized team, partial-sized team, after-hours response, high-stress situational training, etc.). 49 of 51 zoo respondents emphasize the importance of training and do require regular range practice.

Regular training is required by most facilities surveyed.

**Drills and Other Practice Methods**

Firearms, immobilization and incident commander teams should regularly practice in order to be able to efficiently resolve a dangerous animal escape. This should include outside teams, where applicable.

Drills are essential so that all staff members who may be called upon to respond to an animal escape are familiar with their role and thoroughly understand how the plan to resolve the emergency is to be executed. Animal escape drills are also required as part of the AZA accreditation standard 11.2.5: “Live-action emergency drills must be conducted at least once annually for each of the four basic types of emergency (fire; weather/environment appropriate to the region; injury to staff or a visitor; animal escape). Four separate drills are required. These drills must be recorded and evaluated to determine that procedures are being followed, that staff training is effective, and that what is learned is used to correct and/or improve the emergency procedures. Records of these drills must be maintained and improvements in the procedures documented whenever such are identified.”

As much as possible, drills should simulate real events in order to fine tune staff reactions and make improvements on plans. They should also include as many people and departments as required (including outside agencies where appropriate) to assure visitor and staff safety, and depending on the scenario, animal safety.

Conducting regular drills helps:

- Institutions respond rapidly and effectively to animal escapes;
- Emergency response team members make appropriate decisions under pressure;
- Identify deficiencies in institutional plans and suggest how procedures might be improved;
- New team members become familiar with the plan, equipment and procedures;
- Develop teamwork and enable team members to build confidence in each other;
- Emergency response team members develop self-confidence;
• All employees in the institution develop confidence in the emergency response team’s ability to deal with an animal escape emergency;
• Provide team members with the opportunity to check that safety equipment is in the proper location(s) and is working; and
• Illustrate to all employees that the institution has adopted a culture of safety.

Nearly all of the institutions responding to our survey (62 of 63 institutions; 98.4%) indicated they have written animal escape plans, and the vast majority of the plans include detailed instructions for both regular-hours and after-hours animal escapes. The vast majority, but not all, of these plans address public safety, the evacuation of guests and employees and where to shelter guests during an emergency. 58 of 63 responding institutions (92%) indicate that they have regular drill schedules, and 33% include outside agencies in those drills. It is worth repeating here the documentation and evaluation portion of AZA accreditation standard 11.2.5: “Four separate drills are required. These drills must be recorded and evaluated to determine that procedures are being followed, that staff training is effective, and that what is learned is used to correct and/or improve the emergency procedures. Records of these drills must be maintained and improvements in the procedures documented whenever such are identified.” 78% of zoo respondents indicated that they include classroom training as part of their firearms drills and training.

**Final Shoot-to-Kill Decision To Resolve a Dangerous Animal Escape**

The firearms team should have the authority to make the final on-the-spot decision regarding when to shoot or not shoot a dangerous animal.

Research shows that, during times of intense crisis, people have reduced fine motor skills and react by doing what they have been trained to do. If their training is good, they perform well; if they have been trained poorly or with poor technique, they perform poorly. Therefore, the more decisions that can be made ahead of time with clear guidance, the better the chance of success.

In the AZA survey, 48 of 52 zoo respondents said that their plan clearly defines or demarks when a situation warrants lethal force. Nonetheless, the decision on when to shoot an animal is very organization and situation-dependent. A common misunderstanding of the incident command structure is that the commander is making every rapid-fire decision and staff is carrying out these “commands”; this is simply not true. The commander delegates parts of the solution to individuals who are in charge of units of people trained to carry out the mission to the best of their ability. These units are working within what the military calls “commander’s intent,” while keeping the commander informed about what is happening in the field. This is very well illustrated in the AZA survey showing that 44 of 52 zoo respondents leave the final shoot/no-shoot decision in the hands of the firearms team member. We believe this is a best practice that should be adopted by all institutions which may deal with the escape of dangerous animals.

**After-Incident Procedures**

Crisis assistance that can be immediately mobilized after an incident should be in place to provide counseling to employees, volunteers and, in some cases, guests.
After a crisis occurs at a zoo or aquarium, employees within the facility may be negatively affected by the stress that ensues. Firearms team or recapture team members may be placed in high-stress situations or be forced to make difficult decisions. Immobilization team members handle drugs that can be fatal to humans and often are exposed to dangerous animals. Employees that respond to, clean up after, or rebuild after a crisis may experience disturbing images or emotions. Guest relations and public relations teams have to deal with emotional and frightened guests and community. Even those not directly involved with the crisis may be affected by the stress and emotion of others.

Results of the 2012 Animal Escape Survey indicated that 34 of the 62 responding institutions addressed the need for employee assistance or counseling related to an animal escape.

The goal of crisis intervention is to help employees cope with the stress that results from overwhelming events. The intervention should include post-incident defusing, methods to recognize and manage stress and referral for additional counseling. A partnership or agreement should be in place before a crisis occurs with an Employee Assistance Program (EAP) or a local mental health/guidance counseling agency.

Many fire/police agencies have a Critical Incident Stress Management (CISM) team for first responders that could be made available to zoo staff following a crisis. Several organizations have successfully utilized this local resource following a traumatic incident.

The Dallas Zoo formed its own CISM team by partnering with the Dallas Fire and Rescue Department for professional counseling/intervention and training an internal zoo team to handle peer support, assessment, and referral for further assistance (clergy, mental health professionals, etc.). (Animal Keepers’ Forum, Vol. 34 Nos. 11/12)

Creating a CISM team is a procedure that is employed worldwide. Information for the International Critical Incident Stress Foundation is available at www.icisf.org.

A post-incident debriefing should be performed immediately following, and no later than 24 hours, after a practice drill session or an incident.

A quick debriefing should occur within one hour post-event or drill. This will provide the Incident Command System and the Crisis Communications Team with the known facts regarding the incident. Following the initial debriefing, management should debrief each of their respective areas to obtain more detail and to determine what went well and what could be improved. All employees who witnessed or were involved in the incident should describe, in writing, the facts regarding the incident. This documentation should be completed within 24 hours to preserve the integrity of employees’ memories.

Within 24 hours of the incident, all ICS members, department heads and anyone with a significant role in the event should be assembled to review all facets of the crisis. The event timeline can be used as the template for reviewing response time, appropriateness of the response, guest and community reaction, best guidelines, etc. Revision to guidelines and procedures will then reflect improvements identified during the debriefing.
Documentation of all debriefings, radio communication, ICS notes, as well as witness statements, employees on duty, photos, maps, and other relevant information, should be retained electronically or in hard copy.

55 out of 62 zoos and aquariums surveyed in 2012 indicated they have a clear protocol for debriefing staff following an escape event. 50 out of 57 indicated they fully document the debriefing.

Committee Members

This project is the result of a year's work by Association of Zoos and Aquarium professionals from all over the US. Committee members included animal care professionals, veterinarians, directors, and safety professionals. This Animal Escapes Appendix is based on consensus decision making by:

**Escapes Subcommittee**

<table>
<thead>
<tr>
<th>Bob Chastain - Chairman</th>
<th>Lynn M. Cox, CWCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheyenne Mountain Zoo</td>
<td>Detroit Zoological Society</td>
</tr>
<tr>
<td>President and CEO</td>
<td>Occupational Health and Safety Coordinator</td>
</tr>
<tr>
<td>Rene Martin</td>
<td>Tom Meehan, DVM, V.P.</td>
</tr>
<tr>
<td>Fresno Chaffee Zoo</td>
<td>Chicago Zoological Society</td>
</tr>
<tr>
<td>Director of Security/Safety</td>
<td>Vice President of Veterinary Services</td>
</tr>
<tr>
<td>Ken Kaemmerer</td>
<td>Randy Rieches</td>
</tr>
<tr>
<td>Pittsburgh Zoo and PPG Aquarium</td>
<td>San Diego Zoo Global</td>
</tr>
<tr>
<td>Curator of Mammals</td>
<td>Curator of Mammals</td>
</tr>
<tr>
<td>Pat Thomas, Ph.D.</td>
<td>Patricia Waickman</td>
</tr>
<tr>
<td>Bronx Zoo</td>
<td>Akron Zoological Park</td>
</tr>
<tr>
<td>General Curator</td>
<td>Senior VP &amp; General Manager</td>
</tr>
<tr>
<td>Paul Boyle, Ph.D</td>
<td>Association of Zoos and Aquariums</td>
</tr>
<tr>
<td></td>
<td>Senior Vice President of Conservation &amp; Education</td>
</tr>
</tbody>
</table>
# Appendix 2: A Sampling of Common Zoonotic Diseases

<table>
<thead>
<tr>
<th>Source of Infection</th>
<th>Transmission</th>
<th>Symptoms in Humans</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Atypical Mycobacteriosis</strong></td>
<td>“Fish handler’s disease.” Direct contact, lacerations, abrasions.</td>
<td>Redness, swelling, loss of function in infected skin and soft tissues. Potential dissemination in immunocompromised individuals.</td>
</tr>
<tr>
<td><strong>Marine Origin Brucellosis</strong></td>
<td>Carried in bodily fluids (i.e., blood, pinniped birthing fluids and breast milk). Laboratory or post-mortem exposure.</td>
<td>Rare. Presents with fever, myalgia, and/or neurologic signs. Can be fatal.</td>
</tr>
<tr>
<td><strong>Dimorphic Fungal Infection</strong></td>
<td>Histoplasmosis Cryptococcosis Coccidiomycosis Blastomycosis</td>
<td>Direct contact, lacerations, abrasions, or inhalation. Rare. Presents with cutaneous redness, swelling, loss of function or respiratory signs, fever, and malaise. Potential dissemination in immunocompromised individuals.</td>
</tr>
<tr>
<td><strong>Psittacosis (Ornithosis)</strong></td>
<td>The disease is widespread in caged, wild, and exotic birds. Also found in ducks and other forms of poultry. Imports of exotic birds may be diseased. Usually through inhalation of dust or droplets in the air (aerosols) contaminated by bird feces or nasal discharge. The organism can survive for many months in dry dust. Person-to-person spread has been reported.</td>
<td>Flu-like illness with joint and muscle pains, and fever. Can progress to pneumonia, endocarditis, and hepatitis. Early detection and treatment normally results in complete recovery.</td>
</tr>
<tr>
<td><strong>Ringworm</strong></td>
<td>Fungal infection, fairly common in farm animal species, especially in cattle, but also horses, cats, and dogs. Direct contact with infected animals.</td>
<td>Red, scaly patches on the skin, hair loss, and thickened or discolored nails.</td>
</tr>
<tr>
<td><strong>Salmonellosis</strong></td>
<td>Hand-to-mouth contact with feces or contaminated objects.</td>
<td>Diarrhea, fever, abdominal pain. Occasionally severe, and can be fatal.</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>Found in a diverse range of mammals, birds, reptiles, and fish.</td>
<td>Consumption/handling of a range of foods, including most meats and eggs.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Verocytotoxin (Vtec) producing E. coli spp</strong></th>
<th>Hand-to-mouth contact with feces or contaminated objects.</th>
<th>Diarrhea that can lead to serious complications, such as renal failure, and can be fatal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. coli O157 is the best known of the group, found in ruminants (i.e., cattle and sheep). Also carried by pets, seagulls, and other wild birds.</td>
<td>Very low infectious dose.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cryptosporidiosis</strong></th>
<th>Hand-to-mouth contact with feces or contaminated objects, contaminated drinking water, consumption of milk from infected animals. Bottle feeding newborn lambs is associated with a high risk of infection. Not eliminated by water chlorination.</th>
<th>Diarrhea, abdominal pain, and flu-like symptoms for one to three weeks, though symptoms may persist for up to six weeks. Illness is common in children aged 1-5 and complete recovery without specific treatment is the usual outcome. The disease is more severe in people with compromised immune systems, and can be fatal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Found in the feces of mammals, birds, reptiles, amphibians, and fish.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Campylobacteriosis</strong></th>
<th>Hand-to-mouth contact with feces or contaminated objects. Consumption of infected foodstuff, either uncooked or contaminated after cooking.</th>
<th>Bloody diarrhea, abdominal pain. Condition may mimic appendicitis.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Found in the intestines of chickens and turkeys, but also ground water contaminated by farmyard run off or abattoir effluent.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Leptospirosis</strong></th>
<th>Enters the body through abrasions or cuts in the skin, and through the lining of the nose, mouth, and eyes. The organism can survive for considerable periods outside the host.</th>
<th>Fever, headache, vomiting, and muscle pain. It can lead to jaundice, meningitis, and kidney failure. Weil’s disease is serious and can be fatal in up to 20% of cases. However, the disease is more readily treatable if diagnosed in the early stages.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most severe form known as Weil’s disease. Bacterium that causes disease is excreted in infected rat urine, so exposure may occur in any situation where there is contact with rat urine, including foodstuff or material contaminated by rat urine in storage areas and contaminated water (mainly static water or slow-flowing rivers).</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ovine Chlamydiosis (Gestational Psittacosis)</strong></td>
<td><strong>Not known, but likely through inhalation of contaminated aerosols and dusts. Pregnant workers should avoid contact with pregnant animals.</strong></td>
<td><strong>Can be asymptomatic, but where symptoms occur, they are of a flu-like nature with headache, chills, fever, joint pains, and cough. During pregnancy, severe systematic illness with renal failure and hepatic complications can lead to stillbirth or miscarriage.</strong></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Product of gestation from infected sheep and possibly goats. Infected sheep, for example, will shed the bacterium along with their afterbirth.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Appendix 3: Safety Inspection Checklist (Sample)

**Inspection Date:**

**Inspector:**

**Area:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Satisfactory</th>
<th>Location</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Egress</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All exits marked/lit</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td>All exits accessible</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td>Non-exits clearly marked</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td>Exit doors swing out</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td>Exits clear</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td><strong>Stairs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting adequate</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td>Handrails secure</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td>Tread in good condition</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td><strong>Ramps</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong enough for use</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td>All surfaces clear</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td>Handrails secure</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td><strong>Ladders</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strong enough for use</td>
<td>❑ Yes ❑ No</td>
<td>❑ N/A</td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----</td>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td>Secured while in use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Properly stored</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MACHINERY/EQUIPMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moving parts guarded</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannot accidentally start</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop controls within reach</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HAND/POWER TOOLS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant press switch only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functioning guards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double-insulated/grounded</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WORK AREAS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walkways clear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work areas, storerooms, and other areas clean, orderly, and sanitary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety areas clearly marker around equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste bins easily accessible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevated platforms equipped with handrails and toe boards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PRESSURE APPARATUS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas cylinders secured/away from heat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compressors clear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Item</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Tanks drained regularly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety valves, gauges checked regularly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INDUSTRIAL TRUCK LIFT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operated only by authorized personnel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspected daily</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drivers have received safety instruction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“No Passenger” rule enforced</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ELECTRICAL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wiring clear of combustibles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate clearance for control panels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switches clearly marked</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lock-out/lock-in controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SPECIAL HAZARDS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flammable liquids kept in approved containers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No smoking/open flames signs posted in flammable storage areas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDS’s in place, current and accessible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FIRE PROTECTION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extinguishers serviced and tagged properly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees trained in use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One extinguisher per 3,000 feet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FIRST AID</strong></td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------</td>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>Supplies adequate, sanitary, and accessible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye/body wash within 100' of hazard area</td>
<td>Yes</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>PERSONAL PROTECTIVE EQUIPMENT</strong></td>
<td>Yes</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Goggles / safety glasses / face shields</td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Gloves, rubber boots, aprons</td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Warning signs are observed</td>
<td>Yes</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>EVACUATION MAP POSTED</strong></td>
<td>Yes</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>EMERGENCY NUMBERS POSTED</strong></td>
<td>Yes</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>WASTE CONTAINERS</strong></td>
<td>Yes</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Properly labeled</td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Properly stored</td>
<td>Yes</td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>
APPENDIX 4: TELEPHONE BOMB THREAT CHECKLIST (SAMPLE)

Bomb Threat Checklist

*Remain Calm, Be Courteous, Listen, and Do Not Interrupt.*

Caller's exact words:

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

Is the voice familiar? Y/N

Who did it sound like? _____________________

Phone # ________________________ Caller I.D. Name _________________________

Date ____________________ Time Received ___________ Time Ended ____________

Questions to ask:

1. When is the bomb going to explode? ______________________________
2. Where is it right now? ______________________________
3. What does it look like? ______________________________
4. What kind of bomb is it? ______________________________
5. What will cause it to explode? ____________________
6. Did you place the bomb? ______________________________
7. Why? ______________________________
8. Where are you calling from? ______________________________
9. Who are you? ______________________________

 Caller's Voice:

- Male
- Female
- Adult
- Juvenile
- Accent
- Well Spoken
- Irrational
- Incoherent
- Foul
- Calm
- Angry
- Excited
- Slow
- Rapid
- Soft
- Loud
- Laughter
- Crying
- Normal
- Slurred
- Nasal
- Speech Impediment
- Unusual
- Breathing
- Raspy
- Clearing Throat
- Deep
- High
- Disguised
Noise:

- Street
- Dishes
- Voices
- Motor Vehicle
- Music
- Houses
- Long Distance
- Aircraft
- Quiet
- Office
- Machinery
- Animal Noises
- Children
- Static
- Factory Machinery
- P.A. System
- Other Background Noises

Noise Description: ____________________________________________________________

Name: ____________________________

Department: _____________________
APPENDIX 5: HAZARDOUS CHEMICAL COMMUNICATION PROGRAM (SAMPLE)

The objective of a Hazardous Chemical Communication Program is to effectively disseminate pertinent data on the safe handling of hazardous chemicals in the work place. The Hazardous Chemical Communication Program has six components:

- **Section I:** Responsibility Profiles and Hazard Determination
- **Section II:** Safety Data Sheet (SDS) Program
- **Section III:** Hazardous Chemical and Material Inventory and Audits
- **Section IV:** Labeling Program
- **Section V:** Chemical Waste Disposal Program
- **Section VI:** Education and Staff Training
Section I: Responsibility Profiles and Hazard Determination

There are four major "categories of responsibility" that are essential to the effective implementation of a facility's Hazardous Chemical Communication Program. These are:

Safety Manager
The safety manager is responsible for overall management of the facility's program, which includes, but is not limited to, the following activities:

- Take overall responsibility for implementing the Hazardous Chemical Communication Program.
- Maintain the master inventory list of hazardous chemicals and the Master Safety Data Sheet (SDS) File.
- Coordinate inspections so that the Hazardous Chemical Inventory is up to date.
- Assist departments with scheduling training for affected employees.

Department Managers and Supervisors
Department Managers and Supervisors will be responsible for the on-site management of the Hazardous Chemical Communication Program within their department. They will be responsible for the following activities:

- Schedule training related to this program for their departments' new employees and volunteers, and notify the Safety Manager when assistance is needed.
- Make certain that all staff practice safe handling of chemicals in their work area and use necessary personal protective equipment (PPE).
- Maintain a supply of PPE as needed.
- Act as the SDS Coordinator or designate a person to maintain the department's SDS program and records, including an inventory list of hazardous chemicals in the work area.
- Appropriately label all containers, including transfer containers
- Consult and notify the Safety Manager regarding any concerns related to the Hazard Communication Program.

SDS Coordinators
Each department's SDS Coordinator is the contact person for all matters regarding the Hazardous Chemical Communication Program within their department. In this capacity, they supervise all other employee activities as they relate to this program. They must:

- Implement and oversee all aspects of this program within their department.
- Maintain up-to-date SDS binders and hazardous chemical inventories.
- Make sure that their department is engaging in proper storage, handling, and disposal of chemicals.
- Identify and address new chemical hazards in their department, and seek guidance from the manager and or safety manager when there are new hazards.
Employees
As with all of a facility’s activities, employees have the most important role in the Hazardous Chemical Communication Program; the ultimate execution of the program rests in their hands. In this role they must:

- Follow the guidelines provided in this program.
- Know which chemicals in their work area are hazardous.
- Attend training sessions related to this program.
- Become familiar with the information on the SDS for chemicals before working with them.
- Observe all the handling precautions noted on the SDS or discussed in the training sessions.
- Use appropriate PPE as indicated in the SDS, and make sure it is in safe operating condition prior to each use.
- Notify the Supervisor, Departmental Manager, or Safety Manager when an unsafe condition exists.
- Notify the department’s SDS Coordinator when new hazardous chemicals are ordered or received to make sure that an SDS is on file and that all safety requirements are met.

The facility will rely on the data the manufacturer's SDS evaluating the hazards associated with any chemical used or stored on-site. In addition to the SDS, or in its absence, product bulletins from the manufacturer or supplier and the NIOSH pocket guide to chemical hazards may also be used to evaluate health and physical hazards.

Section II: Safety Data Sheet (SDS) Program

OSHA mandates that Safety Data Sheets be available for employees to reference information pertaining to appropriate safe handling procedures and other necessary chemical information.

https://www.osha.gov/Publications/OSHA3514.html

All staff shall have free and readily available access to all SDS and the hazardous chemical inventory for their department or work area throughout their shift. This access shall not be impeded by any locks or other obstructions. The information must be kept current and up to date. Binders containing SDS can be kept in OSHA-mandated Right-to-Know Compliance Centers throughout the building in employee work areas. A duplicate of each department's SDS binder and hazardous chemical inventory shall be kept in the master copy set in a central location to be determined by the facility.

Departments are responsible for collecting and updating this information. All departments listed as participants must comply with this program.

Participation
Anyone who works with hazardous chemicals should be properly trained. Possible job areas include:
• Facilities
• Life Support and Building Maintenance
• Environmental Services
• Veterinary Services and Laboratory
• Marine Mammals
• Planning & Design
• Fabrication Shop
• Exhibit Technicians
• Horticulture
• Education
• Food Service
• Keepers and Aquarists

Participants’ Responsibilities in the SDS Program

Safety Manager
The Safety Manager acts as the Right to Know / Hazardous Chemical Communication Program Coordinator. The Safety Manager Must:

• Assist SDS Coordinators with questions and concerns relating to the Hazardous Chemical Communication Program within their department.
• Schedule SDS Coordinator meetings to assess the program effectiveness, to address concerns, and to coordinate annual audits of master and department SDS binders and hazardous chemical inventories.

Departmental Managers and Supervisors
• Make certain that all aspects of the SDS and Hazardous Chemical Communication Program are followed within their department.
• Acts as, or designates, an SDS coordinator for their department.

Safety Data Sheet (SDS) Coordinator
• Serve as the department’s contact person for the SDS and Hazardous Chemical Communication Programs.
• Make certain that an SDS is either on file, received with the materials shipped, or obtained within 5 working days from the supplier for all hazardous materials received by the department.
• Obtains and maintains their assigned department’s SDS binder and inventory of hazardous chemicals.
• Check that the department’s SDS master copy binder is maintained up-to-date at all times.
• Check that all containers of hazardous materials within their assigned department are properly labeled, and that staff are aware of labeling procedures.
• Coordinates with the Safety Manager to make sure hazardous materials are disposed of correctly.

Master Safety Data Sheet File
A master file with duplicate copies of all SDS binders in the institution should be maintained in a central location. Staff may view the SDS binders at any time.
Safety Data Sheet Employee Access Locations
An important employee right under OSHA’s Hazard Communication Standard (HCS) is to obtain copies of SDSs, upon request, for chemicals they work with. SDS Right-to-Know Compliance Centers may be set up in work areas throughout the building. Should an SDS not be on file, the Safety Manager and departmental SDS Coordinator are responsible for providing employees with copies of the SDS that they request within five working days of the date of the request.

In addition to the Master File, SDS binders for particular departments should be located in the appropriate work area location to facilitate the staff’s convenient and unrestricted accesses to the SDS for all shifts for that department. A master copy of all SDS binders in the building should be maintained in a central location to be determined by the facility.

Common locations in which some institutions place SDS Right-to-Know Compliance Centers include:

- Building Central Master Copy located in the security office
- Marine Mammals/Aquatics areas
- Flammable storage room
- Appropriate animal areas
- Facilities department
- Planning & Design Workshop
- Environmental Services
- Education
- Veterinary & Laboratory
- Food Service

Every participating department should follow this procedure to make sure that a facility will have Safety Data Sheets for all the materials that staff may encounter.

Receiving Chemicals and Potentially Hazardous Materials
For any shipment of a potentially hazardous chemical that is received at the facility, employees should check to see if a Safety Data Sheet was received with the shipment.

If an SDS is received with the shipment:
- Forward the SDS to the SDS Coordinator along with chemical information regarding chemical quantities received and storage locations.
- The SDS Coordinator will check to see if an SDS for that chemical is on file. If it already exists, then the Coordinator should:
  - Make sure that the SDS on file is the most current by date; and,
  - Make a copy of the newest SDS and add it to the Master SDS File in the central location determined by the facility.

If no SDS was received with the shipment:
- Check to see whether an existing SDS for that chemical is on file.
- If an existing SDS is on file for the chemical, no further action is taken.

If there is no SDS for a chemical, notify the department’s SDS Coordinator. The SDS Coordinator will do the following:
- Contact the supplier or manufacturer via telephone and request an SDS be faxed over, or download the SDS from their website.
- Send a written request/email to the supplier or manufacturer if no SDS is provided within 5 days.
- Maintain a list of pending SDS requests.
- Update the Master SDS File.
Sample Safety Data Sheet Request Letter/E-mail

Date: _______________
Safety Data Sheet Department
DuPont Chemical Company
213 1 West Orange Street
Wilmington, DE 19801

Dear Sirs:

We are currently purchasing "AlgiClean" sanitizing cleaner from you on a regular basis. To date we have not received a Safety Data Sheet (SDS) on this product. With the Right-to-Know compliance deadline for our company rapidly approaching, it is extremely important that we have a Safety Data Sheet for this product on file. Therefore, I would appreciate it if you would forward this SDS immediately to me at this address/email address:

Section III: Hazardous Chemical and Material Inventory and Audits

OSHA states that employees have a right to know what hazardous chemicals are located in the workplace. Additionally, employers must provide information regarding safe handling and protection methods when using such materials; the SDS program is implemented to provide this type of information to employees. To make sure that employees have workplace access to a comprehensive list of the chemicals they may handle and the necessary safety precautions for each substance, copies of the hazardous chemical inventory list should also be kept with the department's SDS binders at Right-to-Know Compliance Centers throughout the facility. Employees may request additional copies by contacting the department’s SDS Coordinator, or the Safety Manager. Individuals’ responsibilities include:

Safety Manager
- Coordinate annual facility audits with SDS Coordinators to make certain an up to date hazardous chemical inventory is maintained and accurately reflects the current chemical inventory.
- Make certain the hazardous chemical list is available at all Right-to-Know Compliance Centers and to any employee who requests one within five working days.

SDS Coordinators
- Maintain their departments’ hazardous chemical list in accordance with the Hazardous Chemicals Communication Program.
- Make certain that SDSs are available for all hazardous materials and other necessary chemicals in their department.
• Inform the Safety Manager when the department acquires hazardous chemicals that may require further action as dictated by the Hazardous Chemical Communication Program.
• Attend periodic SDS Coordinator meetings and participating in annual chemical inventory audits.

Employees
• Know who their SDS Coordinator is and the location(s) of their department’s Right-to-Know Compliance Center(s).
• Notifying their SDS Coordinator when hazardous materials are ordered and received

Inventories and Audits
SDS Coordinators must keep their department’s list of hazardous chemicals reasonably updated and place a hard copy of the inventory list at each of their department’s Right-to-Know Compliance Centers. Any time a new list is distributed to the compliance centers, an additional copy should be forwarded to the Safety Manager and placed in the Master SDS binders. The Safety Manager will work with the SDS Coordinators to conduct annual chemical inventories to reconcile the department’s inventory lists, SDS binders, and physical inventory of chemicals.

Section IV: Labeling Program
There is now a Globally Harmonized System of Classifying and Labelling workplace chemicals: https://www.osha.gov/dsg/hazcom/ghs.html

In general, the facility will rely on manufacturers and suppliers to appropriately label all incoming containers they deliver, in accordance with OSHA/GHS standards. There should be no exceptions to this policy; purchased containers of chemicals will typically have OSHA-compliant labeling, and if chemicals or products containing chemicals arrive without the required labeling, they should be refused. The SDS Coordinator for each department will be responsible for overseeing and implementing the labeling system as described here.

In the facility, SDS Coordinators are responsible for seeing that incoming containers of potentially hazardous chemicals are checked to make certain that labeling meeting these requirements is affixed. Individuals’ responsibilities in the labeling program include:

Safety Manager
• Conduct periodic checks throughout the facility to determine that the labeling program is being implemented.

Departmental Managers and Supervisors
• Make certain that the departmental staff implements the labeling program.
• Identify staff in need of labeling training and notify the Safety Manager.
• Make certain that labeling materials are available for departmental use.
SDS Coordinators

- Attend periodic SDS Coordinator meetings.
- Check that the departmental staff implements the labeling program.
- Give on-the-spot training to staff who are not using the labeling program.
- Make certain that labeling materials are available for departmental use.

Employees

- All employees should be familiar with the labeling system and attend required training in this capacity.
- All employees are responsible for labeling any secondary container in accordance with the procedure set forth in this program.

Labeling Requirements

All labels should, at minimum, meet the criteria of OSHA’s Hazard Communication Standard (HCS), aligned with the Globally Harmonized System (GHS) of classification and labeling of chemicals. The minimum amount of information required by the Hazard Communication Standard for container labels is:

- Identity of the hazardous chemicals contained therein; and,
- The name and address of the chemical manufacturer, importer, distributor, or other responsible party.

More information on the Hazard Communication Standard is available at:
https://www.osha.gov/dsg/hazcom/

In-House Labeling

The facility is responsible for labeling in-house secondary containers. Departmental Managers, supervisors, and staff are responsible for seeing that these containers of materials are labeled using the following guidelines:

- When hazardous materials or chemicals are transferred from their original containers to secondary containers, each secondary container must be labeled, tagged, or clearly marked to identify the container contents, appropriate hazard warnings, and recommended PPE. The NFPA 704 label system can be used for that purpose.
- Labels must be of prominent size and firmly attached to the container in a prominent, visible location and not obstruct other labels or create a hazardous handling situation.
- Chemical storage containers, tanks, drums, etc. that contain hazardous materials must have clearly affixed labels, signs, or placards, which identify the container contents and have the appropriate hazard warnings.
- Empty containers cannot be reused to hold chemicals other than the originally contained chemicals unless the original labels are removed or defaced and new labels are attached to identify the new contents and associated hazard warnings.

Labeling is not required for portable containers into which hazardous materials are transferred when the material is intended for use within the same work shift and it remains under the immediate control—at all times—of the employee who performs the transfer. However, the facility should label even these "single use" containers whenever possible. See Section 5 of this appendix for more specific instructions on labeling containers of hazardous waste.
Labeling Stations
Labeling stations should be set up in several areas of the building. SDS Coordinators who find a need to establish a labeling station in their department should do so and notify the Safety Department so that these records can be updated. Departments that only occasionally use labels may purchase a set of labels along with other office supplies. At no time should containers be left unlabeled; if any employee exhausts their immediate supply of labels, they should borrow some from an alternate labeling station until new supplies arrive. Possible locations for labeling stations include flammable storage rooms, facilities operations rooms, fabrication shops, and laboratories.

Section V: Chemical Waste Disposal Program
Zoos and aquariums should attempt to avoid the accumulation and overstock of chemicals through careful planning and by ordering only the amount of chemicals necessary for a project. However, hazardous chemicals will occasionally need to be disposed of as they expire, fall out of use, or are recalled. These chemicals become “hazardous wastes.”

Wastes that contain properties that make them potentially harmful to human health or the environment are defined as hazardous waste. These regulated wastes can be liquids, solids, contained gases, or sludge. They can be the by-products of a production or testing process, or simply discarded commercial cleaning products. To determine if a waste is regulated, contact your state and local jurisdictions in charge of environmental management. Each facility should designate a Hazardous Waste Coordinator (often the SDS Coordinator for their department) responsible for tracking current hazardous waste accumulation and disposal plans, and institute a hazardous waste management plan for meeting regulatory requirements that is in accordance with the applicable federal, state, and local regulations. Reports and record-keeping requirements may vary by jurisdictions. Consult state and local regulatory agencies for the reporting and record-keeping requirements. Individuals’ responsibilities include:

Safety Manager
- Work with the SDS Coordinators to process hazardous wastes for disposal through an external contractor in accordance with Federal and State regulations.
- Maintain disposal records.

Departmental Managers and Supervisors
- Identify staff that work with, and processes involving, the department’s hazardous chemicals and wastes.
- Distribute information on hazardous waste to appropriate staff, and contacting the Safety Manager for appropriate training.
- Make certain that staff involved in disposal follows the hazardous waste disposal plan.
SDS Coordinator

- Supervise the proper collection, storage, and labeling of hazardous wastes in their departments, as described in this program.
- Identify staff within their department that work with hazardous or potentially hazardous chemicals.
- Notify the Safety Manager when hazardous wastes are identified. SDS Coordinators are responsible for making sure that staff:
  - Follow the procedures identified in this section and the Hazardous Materials Communication Program; and,
  - Notify the Safety or Department Manager when additional staff training is necessary.

Employees

- Employees that work with potentially hazardous chemicals must be familiar with this program and be able to identify hazardous wastes.
- Employees should notify the SDS Coordinator of hazardous wastes.

Regulating Hazardous Waste

Regulations pertaining to the disposal of hazardous wastes and chemicals in the United States are from the Resource Conservation Recovery Act (RCRA). These regulations specify that hazardous wastes can be legally disposed of at Environmental Protection Agency (EPA) approved disposal facilities. Following this program can help protect zoos and aquariums from regulatory actions by the EPA, which can levy substantial fines or prison sentences against persons improperly handling or disposing of hazardous wastes and chemicals.

Hazardous Waste Defined

The EPA defines hazardous waste as:

“By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (ignitability, corrosiveness, reactivity, or toxicity) or appears on special EPA lists.”

Following the EPA’s definition, hazardous wastes can take the form of solid, liquid, or compressed gaseous materials that are no longer used, and are stored until the facility has enough to treat or dispose of. When hazardous waste is not properly disposed of, it can cause death, serious irreversible or incapacitating illness, and damage or pollution to the environment. The EPA classifies hazardous wastes as either “Characteristic Wastes,” or “Listed Wastes.”

Characteristic Wastes (one or more criteria):

- Corrosive waste: Chemical waste that reacts with the surface of a material, causing it to deteriorate or wear away (pH less than 2 or greater than 12.5).
- Ignitable waste: Waste that is easily flammable, with a flash point less than 60 degrees Celsius (140 degrees Fahrenheit).
- Reactive waste: Waste that is unstable or undergoes rapid or violent chemical reaction with water or other materials, and releases toxic gases.
• Toxic waste: A waste that can produce injury if inhaled, swallowed, or absorbed through the skin.

Listed Wastes:
The EPA has identified chemicals and hazardous wastes by technical names, some of which are listed on the internet http://www.epa.gov/osw/hazard/wastetypes/pdfs/listing-ref.pdf

Disposal Methods
In order to determine the proper method of disposing of a specific chemical, employees should refer to the chemical’s original container label, SDS, or the manufacturer/distributor. Some hazardous wastes can be treated on-site with other materials that will render them non-hazardous. This process should only be performed by qualified staff and only when the process does not pose additional risks.

Hazardous wastes or chemicals with disposal restrictions will be dealt with in the following manner:

If necessary, notify the SDS Coordinator for assistance with these procedures.

Label the waste container; all hazardous waste containers must be labeled in accordance with our labeling procedures (NFPA label). In addition to an NFPA label, a hazardous waste label (with the name of chemical and manufacturer) must be completely filled out and attached to the container. NFPA and hazardous waste labels must be available at various labeling stations in the building. Otherwise, employees should contact their SDS Coordinator or Safety Manager.

At minimum, the hazardous waste labels will contain the following information:

• The words “Hazardous Waste”
• Date the label was completed
• Department name
• Names of the chemicals in the container and percentage of each, based on 100%
• pH, and type of associated hazard (Corrosive, Ignitable, Reactive, Toxic, or Biological)
• Type of container, its holding capacity, and the amount of waste inside it

After completing a hazardous waste label, employees must alert their department’s SDS Coordinator and give them a copy of the completed label. The SDS Coordinator will then:

• Determine that the information is correct and that all the necessary steps and storage safety precautions have been taken.
• Contact the Safety Manager to arrange for safe temporary storage of the hazardous waste. If space permits, the waste will be placed in the flammable storage room.
• Check with the Safety Manager for appropriate temporary storage.
Notify the Safety Manager of the need to dispose of the chemical. The Safety Manager and SDS Coordinator will work together to schedule a hazardous chemical pick up/removal from the facility.

The chemical pick up/removal will be contracted out to a company with applicable licenses that specializes in this type of work and meets all government compliance laws/codes applicable to this scope of work.

*Disposal records must be maintained for five years.*

**Chemical Spill Plan**

Before handling any chemical, employees should be familiar with the hazards associated with it and wear the appropriate personal protective equipment (PPE). Staff should read and be familiar with the SDS prior to using or working with any chemical. If a department works with hazardous chemicals, their SDS Coordinator should develop procedures to handle such chemicals. Specialized chemical spill clean-up kits may be necessary in a department. Employees should not attempt to clean up any chemical spill unless they know the proper way to do so, or have been trained in the use of a chemical spill clean-up kit. Should there be an accidental spill of a chemical, employees should respond according to the following general guidelines:

- If danger exists, staff should immediately distance themselves from the spill.
- The person to observe a spill must immediately notify a supervisor or manager and the Facilities department.
- Consult Safety Data Sheets.
- If the chemical is hazardous, coordinate with facilities so that the air-handling units can be used accordingly. Please note that accumulation of large amounts of some hazardous vapors is also dangerous. Staff should reference the relevant SDS for guidance on chemical-vapor hazards. In some cases it may be necessary to set the ventilation units on exhaust.
- The Facilities Operators will assist during this type of emergency by:
  - Taking appropriate action to ventilate the area
  - Sealing the room/area of the incident if necessary and safe to do so
  - Assisting in containing the spill and clean-up process
  - Activating the building emergency notification list
  - Asking Security to contact the fire department, if necessary. Most fire departments have a special response team for hazardous spills.
- Contain the spill by use of spill kits/stations, etc.
- Secure the area by use of barriers or ropes. Keep people away.
- Remain vigilant for toxic fumes. If employees feel sick or dizzy, they should evacuate the area. Do not let anyone near the spill until authorities arrive.
- Prepare to evacuate the building/area. If the evacuation alarm is activated, proceed with the evacuation plan.
- Wait for instructions from a manager/supervisor.
- Check with the Facilities department before returning to the space.
Section VI: Education and Training

Each facility should institute an employee education and training program regarding the handling of hazardous chemicals in the workplace. All employees should be trained (at minimum) during the following times:

- At the time of their initial assignment
- Whenever a new physical or health hazard is introduced to the workplace
- When unsafe work practices are observed

To keep their knowledge in these areas current, a refresher course should be given periodically to all relevant employees. Department managers are responsible for ensuring that their employees receive department-specific training as it relates to this program.

Training Topics
The topics covered in the educational program should include, but are not limited to, the following subjects:

- Requirements under OSHA’s Hazard Communication Standard and Globally Harmonized Standard
- Operations in the work area where hazardous chemicals are present
- The location and availability of the written hazard communication program
- The location of the hazardous chemicals inventory and SDS binders
- Signs that can indicate the presence of hazardous chemicals in the work area
- Physical and health hazards associated with the types of hazardous chemicals in the work area
- Recommended work practices that employees can use to protect themselves from chemical exposure, including the use of appropriate PPE
- How to read and interpret information SDSs
- How to fill out, use, read, and interpret chemical container labels
- Emergency procedures and first aid required during an incident involving a hazardous chemical

Training Elements
The facility’s Education and Training presentations should make use of several training techniques including, but not limited to, the following:

- Classroom atmosphere with personal instruction
- Videotape programs
- Training manual/employee handouts
- The zoo/aquarium’s intranet website
- Open discussion period
APPENDIX 5A: COMMON AQUARIUM CHEMICAL TREATMENTS (SAMPLE)

MS222
This substance is a white powder used for anesthesia, sedation, or euthanasia of fishes. MS 222 is a muscle relaxant that operates by preventing action potentials. By blocking action potentials, no signals can be exchanged between the brain and the extremities. The optimum concentration used is 50-75 ppm (parts per million). However, the dosage will vary with the size and species of the fish, and other variables. It is easily soluble in fresh or salt water. SDS Information Link: http://www.pharmaq.no/Products/PDFs/MSDS/MSDS_MS222.pdf

Copper Treatment—Copper Sulfate
Copper Sulfate (CuSO$_4$) is incorporated in the treatment of various fish diseases or parasitic infections while fish are quarantined. Copper can be used as an antibacterial agent in the treatment of bacterial gill disease, as well as an ant parasitic compound effective against, but not limited to Chilodonella, Trichodina, flukes, and Oodinium. A common solution is comprised of CuSO$_4$, water, and citric acid. SDS Information Link: http://www.sciencelab.com/msds.php?msdsId=9925783

Chloroquine
Chloroquine is a therapeutic concentration that is nontoxic to fish but highly toxic to micro- and macroalge, and to certain invertebrates. This treatment is used in the treatment of various parasites and skin conditions. SDS Information Link: http://www.sciencelab.com/msds.php?msdsId=9923444

Calcium Treatment—Calcium Chloride
This is an osmosis regulator enhancer used to prevent shock and/or relieve stress for fish. It is also used to raise the hardness level of the water. SDS Information Link: http://www.sciencelab.com/msds.php?msdsId=9927477

Soda Ash (Sodium Carbonate)
Na$_2$CO$_3$ is a sodium salt form of carbonic acid. Sodium Carbonate is a white powder that is used to soften water and regulate pH to maintain stable alkaline conditions. SDS Information Link: http://www.sciencelab.com/msds.php?msdsId=9927263

Alkalinity Additions—Sodium Bicarbonate
Alkalinity of water is the sum of all the titratable bases, and measures the water’s ability to neutralize acid. Since the alkalinity of much surface water is a function of carbonate, bicarbonate, and hydroxide content, alkalinity is taken as an indicator of their combinations. Sodium Bicarbonate (NaHCO$_3$) is a white solid that is crystalline but often appears as a fine powder. SDS Information Link: http://www.sciencelab.com/msds.php?msdsId=9927258
**Buffer saltwater pH—1:6 Sodium Carbonate & Sodium Bicarbonate**
This is used to accurately raise the pH of a known volume of saltwater. SDS Information Links:
http://www.sciencelab.com/msds.php?msdsId=9927258 and
http://www.sciencelab.com/msds.php?msdsId=9927263

**Dimilin**
Dimilin is an effective treatment for anchor worm, fish lice, and gill maggots. It can also be used for treating fluke. This treatment contains formalin, a formaldehyde solution. Dimilin proves equally effective against our crustacean foes Lernea, Argulus, and Ergasilus. Dimilin is a chitin synthesis inhibitor, which acts as a gyrase of the DNA that produces chitin. Without chitin, a parasite has no "skin" and it perishes. Dimilin is not effective against flukes. SDS Information Link: http://www.cdms.net/LDat/mp3GL000.pdf

**Ammonia-Nitrogen Removal**
Amquel and Buffer can be used to bind and neutralize ammonia from a system before it becomes toxic to the animals. SDS Information Link for AmQuel:
http://householdproducts.nlm.nih.gov/cgi-bin/household/brands?tbl=brands&id=14017001

**Oxolinic Acid**
Oxolinic acid is a synthetic quinolone antibiotic used to target the muscles and skin in natural proportions when a bacterial infection is found. It is well-absorbed in soft water. SDS Information Link: http://www.sciencelab.com/msds.php?msdsId=9926357

**Formalin**
An aqueous solution of formaldehyde used as a disinfectant and preservative for biological species, formalin is used to control parasites in fish. Formalin is used to treat fungi, some bacterial infections, most of the ciliated protozoans (ich is an exception), and flukes. Formalin is not successful in treating Argulus and Lernea and many, frequent doses are required to kill off the elusive ich organism with formalin. SDS Information Link:
http://www.sciencelab.com/msds.php?msdsId=9924095 and
http://www.sciencelab.com/msds.php?msdsId=9924096

**Furazone Green**
Furazone green can be used to treat any disease that responds to antibiotics—primarily bacterial infections. It is second only to injection in effectiveness. This treatment is made of a combination of furan liquids. SDS Information Link:
http://www.sciencelab.com/msds.php?msdsId=9927174

**Salt**
Salt is used to eliminate ciliated protozoan parasites, curb the absorption of nitrite, and reduce the osmotic pressure exerted by fresh-water on any hole in the skin or gill. SDS Information Link: http://www.nscminerals.com/section_pics/01_MSDS%20Sodium%20Chloride10.pdf
**Praziquantel**
This is used to treat external parasites such as flukes and flatworms. This can be added to fresh or saltwater. SDS Information Link: [http://www.sciencelab.com/msds.php?msdsId=9924708](http://www.sciencelab.com/msds.php?msdsId=9924708)

**Acetazolamide**
This antibiotic inhibits carbonic anhydrase activity and elicits a respiratory acidosis. SDS Information Link: [http://www.sciencelab.com/xMSDS-Acetazolamide-9922770](http://www.sciencelab.com/xMSDS-Acetazolamide-9922770)

**SMZ/TMP (Fish Sulfa Forte) (Sulfamethoxazole & Trimethoprim)**
Useful for control of some common bacterial fish diseases, including gram-negative aeromonas and pseudomonas genera and the mycobacterial group. SDS Information Link: [http://www.tevausa.com/assets/base/products/msds/SMX-TMP_MSDS.pdf](http://www.tevausa.com/assets/base/products/msds/SMX-TMP_MSDS.pdf) or [http://www.paipharma.com/pdfs/36593a5d-78c8-4b0a-be91-251095fda546_msdss.pdf](http://www.paipharma.com/pdfs/36593a5d-78c8-4b0a-be91-251095fda546_msdss.pdf)
# Appendix 6: Crisis Communication Checklist (Sample)

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the situation?</td>
<td></td>
</tr>
<tr>
<td>Who is the spokesperson?</td>
<td></td>
</tr>
<tr>
<td>What will happen next?</td>
<td></td>
</tr>
<tr>
<td>Who on the crisis team needs to be notified?</td>
<td></td>
</tr>
<tr>
<td>Do emergency agencies need to be notified?</td>
<td></td>
</tr>
<tr>
<td>What immediate steps need to be taken?</td>
<td></td>
</tr>
<tr>
<td>What is known, and who already knows it?</td>
<td></td>
</tr>
<tr>
<td>Is there potential media and public interest?</td>
<td></td>
</tr>
<tr>
<td>Who will be affected?</td>
<td></td>
</tr>
<tr>
<td>What equipment and resources will be needed?</td>
<td></td>
</tr>
<tr>
<td>What are people feeling—what emotions need to be considered?</td>
<td></td>
</tr>
<tr>
<td>What information is needed?</td>
<td></td>
</tr>
<tr>
<td>When will it be available?</td>
<td></td>
</tr>
<tr>
<td>What can and cannot be said?</td>
<td></td>
</tr>
<tr>
<td>Is legal counsel needed?</td>
<td></td>
</tr>
<tr>
<td>Who is the secondary spokesperson?</td>
<td></td>
</tr>
<tr>
<td>How will the information be communicated?</td>
<td></td>
</tr>
<tr>
<td>When will staff be notified?</td>
<td></td>
</tr>
<tr>
<td>What media will be contacted?</td>
<td></td>
</tr>
<tr>
<td>Does the Board of Directors need to be contacted?</td>
<td></td>
</tr>
<tr>
<td>Does the City need to be contacted?</td>
<td></td>
</tr>
<tr>
<td>Do County Commissioners need to be contacted?</td>
<td></td>
</tr>
<tr>
<td>Does the State need to be contacted?</td>
<td></td>
</tr>
<tr>
<td>Does the AZA need to be contacted?</td>
<td></td>
</tr>
<tr>
<td>Do any university partners need to be contacted?</td>
<td></td>
</tr>
<tr>
<td>Do any oversight agencies need to be contacted? (USDA, DNR, USFWS, etc.)</td>
<td></td>
</tr>
<tr>
<td>Do any international agencies and organizations need to be contacted?</td>
<td></td>
</tr>
<tr>
<td>Are there any cultural institution partners that need to be notified?</td>
<td></td>
</tr>
<tr>
<td>Do donors needed to be contacted?</td>
<td></td>
</tr>
<tr>
<td>Do members need to be contacted?</td>
<td></td>
</tr>
<tr>
<td>Do the neighborhood associations need to be contacted?</td>
<td></td>
</tr>
<tr>
<td>Do local business owners need to be contacted?</td>
<td></td>
</tr>
<tr>
<td>Who will begin the phone tree of notification?</td>
<td></td>
</tr>
<tr>
<td>How often will updates be provided and to whom?</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 7: SAFETY INSPECTION FORM (SAMPLE)

Area(s): Date:
Inspector(s):
Accompanying Staff:

Fire Extinguishers
Reported number in section:
Designated person responsible for making monthly checks of the fire extinguishers and recording status on the fire extinguisher inspection chart:

Fire extinguisher checklist (if there is an infraction, please note)
  • Extinguisher type should be appropriate for the area.
  • Make sure tag indicates current inspection.
  • If an area does not have an extinguisher and it appears that it should, the inspector should make a recommendation.
  • Extinguishers should be off the ground and easily accessible.

Notes/Recommendations:

Breaker Boxes
  • Storage cannot be within 36 inches of electrical panels, including on top of the box. This is a Fire Code violation.
  • If a breaker box does not have a label indicating as such, the section should notify the electrician so a label can be placed on it to remind staff.

Notes/Recommendations:

Chemicals
  • All chemical containers should be labeled as to content. Do not remove labels from the container. A Safety Data Sheet (SDS, formerly called an MSDS) must be readily available for all chemicals. If an SDS is not available, contact the appropriate department or the manufacturer. If contents are unknown, the product should be sent to Environmental Safety or other department so that the material can be identified.
• Chemicals should be stored at the appropriate temperature and not in the vicinity of food, oral medications, or where the public has access.
• The section should have an SDS manual for chemicals used in the area.

Notes/Recommendations:

Tripping Hazards
• Check for hazards that someone could possibly trip over, such as exposed wiring or an electrical cord across a walkway.
• Flooring should be flat.
• Slippery areas should be addressed by providing strips or matting, and staff should be wearing appropriate footwear.
• Check boardwalks for boards or nails that are coming up.
• Metal grates should be flat and not exhibiting holes that are large enough to catch the heel or toe of boots/shoes.
• All drains and moat pits should be covered.
• All pathways should be clear enough for people to walk through easily and should not have any holes or uncovered areas, such as an irrigation box.

Notes/Recommendations:

Wiring and Outlets
• Check for exposed wiring that is adjacent to an animal enclosure or could pose some other type of safety concern.
• Check for exposed outlets in areas where they should be covered.
• Outlets should be GFI where necessary.
• Make sure that extension cords are not being used outside of temporary situations.

Notes/Recommendations:

Ceilings and Lighting
• Check for any hanging ceiling tiles or light covers.
• Check that lighting is functioning properly.
• All light bulbs should be covered in animal enclosures.
• Check that all emergency exit signs are lit.

Notes/Recommendations:
Equipment

- Check expiration date on eye wash. (If expired, a new one should be obtained from the Warehouse.)
- Staff should have proper safety equipment for use as needed.
- Storage areas should be organized enough so that there is not a tripping hazard or possibility of objects falling.
- Check that the fire control panels are functioning properly.
- Confirm that carts, other vehicles, and tools are in good working order.

Notes/Recommendations:

Animal Containment

Check that all animal containment meets appropriate engineering standards for horizontal and vertical containment/barriers, is secure, in good condition, and functioning properly (e.g., fencing, hotwire, doors, gates, hydraulics, pulleys, etc.).

Notes/Recommendations:

Public Areas

- Check railings/barriers to make sure they are in good condition.
- Check for tripping hazards, including uneven sidewalk surfaces.

Notes/Recommendations:
# Appendix 8: Inspection and Review Sheets

## Fire Inspection Review Checklist (Sample)

<table>
<thead>
<tr>
<th>Item</th>
<th>Satisfactory</th>
<th>Location</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are exits clearly demarcated, accessible, and unobstructed?</td>
<td>☐ Yes ☐ No</td>
<td>☐ N/A</td>
<td></td>
</tr>
<tr>
<td>Are all heat-producing appliances on non-combustible surfaces?</td>
<td>☐ Yes ☐ No</td>
<td>☐ N/A</td>
<td></td>
</tr>
<tr>
<td>Are heat-producing appliances at least 18 inches away from any combustible materials (i.e., boxes, hay bales, etc.)</td>
<td>☐ Yes ☐ No</td>
<td>☐ N/A</td>
<td></td>
</tr>
<tr>
<td>Are coffee makers and hot plates unplugged?</td>
<td>☐ Yes ☐ No</td>
<td>☐ N/A</td>
<td></td>
</tr>
<tr>
<td>Are all portable heaters turned off or unplugged?</td>
<td>☐ Yes ☐ No</td>
<td>☐ N/A</td>
<td></td>
</tr>
<tr>
<td>Are all electrical panels kept clear of obstructions at a minimum three feet?</td>
<td>☐ Yes ☐ No</td>
<td>☐ N/A</td>
<td></td>
</tr>
<tr>
<td>Are flammable and combustible liquids separated from regular combustible storage (i.e., hay bales, shavings, etc.)?</td>
<td>☐ Yes ☐ No</td>
<td>☐ N/A</td>
<td></td>
</tr>
<tr>
<td>Are flammable liquids stored in an approved flammable liquids cabinet when total quantity exceeds ten gallons?</td>
<td>☐ Yes ☐ No</td>
<td>☐ N/A</td>
<td></td>
</tr>
<tr>
<td>Are cleaning supplies safely stored in designated storage areas?</td>
<td>☐ Yes ☐ No</td>
<td>☐ N/A</td>
<td></td>
</tr>
<tr>
<td>Are mechanical and electrical rooms free from storage?</td>
<td>☐ Yes ☐ No</td>
<td>☐ N/A</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----</td>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td>Are all storage room, electrical/mechanical room, and hazardous storage room doors closed and secured? Also, it is good practice to close all other doors.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are all combustibles kept clear of ignition sources (i.e., directly in front of an electrical outlet, portable heaters, etc.)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are oily and greasy rags stored in a self-closing metal container?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have empty wood pallets been removed from the building?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there access to all fire protection equipment (valves, fire alarm panel, pull station, etc.)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are all sprinklers unobstructed, with 18 inches minimum free clearance?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are all compressed gas cylinders properly stored and secured?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is a daily Hot Work Permit posted at the site where hot work is being conducted (soldering, welding, grinding, heat gun, etc.)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is a Fire System Impairment Form posted at the site of the head-end equipment of the impaired systems (i.e., fire alarm panel, sprinkler valve)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has Security been notified of the fire system impairment?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Animal Escape Review Checklist  (Sample)

Add one point for each item checked in this section.

___ 1. Was the Animal escape clearly declared on the Zoo Channel, using the exact phrase “Animal escape?” (Note: Use “Plain English” emergency descriptors)

___ 2. Was the Animal escape situation repeated on the Zoo Channel at least every 5-10 minutes?

___ 3. Was the exact location clearly described, using proper formal names and referencing available points of orientation?

___ 4. Was the pertinent description information (species, etc.) clearly provided?

___ 5. Did the most senior division staff member clearly make a decision and direct the overall response from the scene, rather than being caught up chasing the animal, etc.?

___ 6. Did available personnel in the immediate area, regardless of work unit, react appropriately (eg respond to assist by moving other staff, contractors, and guests away from the Animal escape scene)?

___ 7. If required, did Park Safety Base/Dispatch contact the police to notify them of the emergency?

___ 8. If required, did Park Safety Base/Dispatch make certain that the police were directed to stand by, but not enter, zoo grounds?

___ 9. Was Park Safety Base/Dispatch contacted directly by radio or telephone by the Initial Observer, without having to relay through a third party?

___ 10. Did Animal Division staff first secure their work areas before moving to assist with the Animal escape?

___ 11. Did Animal Division staff respond to the Animal escape with the proper equipment (PPE, nets, etc.)?

___ 12. Was communication clear and concise, with little cross-talk and “DXing” (“stepping” on someone) on the Channel?

___ 13. Was a Supervisor Summary report completed?

___ 14. Were all exterior perimeter gates promptly closed, locked, and announced as secure?

___ 15. Were all interior perimeter gates promptly closed, locked, and announced as secure?

___ 16. Did the miniature railroad stop clear of all gates and confirm that they were stopped?

___ 17. Was proper radio protocol used during the emergency?

___ 18. Was the Animal escape called “All Clear” on the Zoo Channel at the conclusion of the incident?

Subtract one point for each item checked in this section.

___ 19. Was there disruptive “blurt” on the radio (excessive speaking without being acknowledged or given permission by Base/Dispatch first)?
20. Was staff unprepared for the arrival of a second, third, fourth (etc.) emergency vehicle (if there was an injury of any kind), therefore causing the supplemental vehicles to be unescorted or undirected?

21. Was the staff person who discovered the Animal escape not equipped with a two-way radio, or equipped with a two-way radio that cannot contact Park Safety Base/Dispatch on the Zoo Channel?

22. Did staff members from any work unit fail to lend assistance or overlook an obviously unusual situation, such as an animal outside of an enclosure?

23. Did the Animal escape progress without regular updates by the Animal Incident commander on the Zoo Channel, even if the emergency was under control?

24. Was emergency two-way radio traffic interrupted by someone who was obviously not paying attention to radio traffic?

25. Did the person directing fail to oversee the entire emergency response and/or not serve as the "eyes and ears of the rest of the zoo" during the course of the emergency?

Add Section A Points: ________
Subtract Section B Points: ________
Total Points: ________

Acceptable: 15 or more points
Marginal: 12 to 14 points
Unacceptable: 11 or fewer points

Incident Date: ________ Time: ________
Review Date: ________ Time: ________
Reviewed by: ________________________________
Notes:
Severe Weather Review Checklist (Sample)

Add one point for each item checked in this section. Write N/A for Not Applicable.

___1. Was the severe weather event (barring a tornado with 20 minutes or less warning time) clearly declared on the Zoo/Aquarium Channel at least an hour prior to impact at the zoo/aquarium property line?

___2. Was the type of severe weather event clearly described, including its direction of approach?

___3. Did Base/Dispatch request storm spotters to be alert/watch for/call in any storm information?

___4. Were guests warned by security patrols 45 minutes prior of severe weather that a storm was possible?

___5. Were guests requested to shelter in appropriate locations, within a fifteen to thirty minute window of the severe weather impact?

___6. Were guests sheltered efficiently and politely?

___7. Were personnel updated every five to ten minutes regarding the current weather situation (within a thirty minute window of impact at the property line)?

___8. After it was determined that a severe weather event was imminent, did Base/Dispatch request that all equipment that could become a projectile be properly secured?

___9. Did a Department Manager announce over the radio to secure the resident animal population inside?

___10. After the impact of the severe weather event, did Base/Dispatch systematically request from each department a report of any storm damage (buildings, downed electrical lines, water over road, generators off-line, etc.) and document all reports?

___11. Was an Animal Incident commander (AEC) declared (if there was an impact to the zoo/aquarium property line)?

___12. Did the AEC systematically request from each department a report that each resident animal was accounted for?

___13. Did Base/Dispatch systematically request from each department head that all personnel were accounted for?

___14. Were key staff members immediately notified, and notification confirmed of the severe weather situation?

___15. Were the Executive Leadership Team (ELT) Members immediately notified, and notification confirmed of the severe weather situation?

___16. Was an incident report, including all demographic information, generated and reviewed by a supervisor (if there was storm damage to life and property)?

___17. Was an All-Clear announcement made after the severe weather event had concluded?

___18. Were all ride operations ceased until the severe weather event was declared over?
Subtract one point for each item checked in this section.

___19. Was emergency two-way radio traffic interrupted by someone who was obviously not paying attention to radio traffic?

___20. Did the miniature railroad or carousel fail to stop operating during the severe weather event?

___21. Were any areas of the zoo/aquarium overlooked/missed during the storm damage assessments?

Add Section A Points:__________
Subtract Section B Points:__________
Total Points:__________

Acceptable: 15 or more points
Marginal: 12 to 14 points
Unacceptable: 11 or fewer points

Incident Date: ________ Time: ________
Review Date: ________ Time: ________
Reviewed by: __________________________
Notes: