Behind the Scenes
A Look at Mystic Aquarium’s Safety Programs

Nathan S. Fague
Director of Safety & Security

Mystic Aquarium, a division of Sea Research Foundation, Inc.

Our Mission

• The mission of Mystic Aquarium is to inspire people to care for and protect our ocean planet through conservation, education and research.
Our Campus Community

- 300 employees
- 700 volunteers
- 20 interns each academic semester
- Fully-licensed preschool with 20 students
- On-site vendors
- 750,000 guests each year
Our Teams

Zoological Operations
- Animal Care & Veterinary Services
- Animal Rescue and Rehabilitation
- Dive Safety
- Husbandry
  - Fish & Invertebrates
  - Marine Mammals & Birds
- Water Quality
  - Life Support

Our Teams

External Relations
- Guest Services
  - Admissions
  - Interpretation
  - Membership
- Marketing
- Public Relations
- Social Media

Development
Our Teams

Mission Programs
- Exhibits
- Research

Education & Public Conservation Programs

Our Teams

Finance
- Human Resources
- Information Technology

Ocean Blue Catering
- Catering
- Penguins Café
- Reservations
Our Teams

Facilities
  – Housekeeping
  – Grounds Keeping
  – HVAC & Mechanical Services
  – Maintenance
  – Safety & Security

My Responsibilities Include:

• Management Team Member
• Chemical Hygiene Officer
  – Clinical Laboratory
  – Water Quality Laboratory
  – Research Laboratory at UCONN
• Biological Safety Officer
• Chair of Aquarium Safety Committee
• Safety Advisor for Aquarium Dive Control Board
• Member of Aquarium Exhibits, Diversity and Wellness Committees
• Member of Association of Zoos and Aquariums Safety Committee
  – Developing example practices for ozone use to improve water quality
My Professional Affiliations

- American Society of Safety Engineers
  - Connecticut Valley Chapter
- American Industrial Hygiene Association
  - Connecticut River Valley Chapter
- Connecticut Safety Society
- Connecticut Biosafety Alliance

Animals: A Unique Hazard

- Animate object
- Unable to verbally communicate
- ‘Flight or fight’ psychological response to stress
Zoonoses

Animal bites are of particular concern because of the potential for zoonotic disease transmission

Example: Seal Finger
Mycoplasma phocacerebrale or Erysipelothrix rhusiopathiae

Treatment: Antibiotic therapy
Penicillins, cephalosporins, erythromycin
Tetracycline

‘Fact Sheets’ for physicians at occupational health clinic

My Academic Focus

• Occupational Health and Safety at the Human/Animal Interface

• One Health (CDC)
The Control of Zoonotic Diseases in Zoological Institutions

1. Only work with animals which prepared to handle
2. Decrease stocking density
3. Local exhaust ventilation
4. Training, housekeeping
5. Protective clothing and PPE

Top Deficiencies in Safety Standards at Zoos and Aquariums in 2011

- Lack of good housekeeping
- Poor zoonotic disease training and prevention
- GFCIs
- Inappropriate hazardous chemical handling
- Insufficient live action drills
- Lack of adequate barriers
- Lack of adequate staffing
- Lack of adequate staff training
- Insufficient perimeter fencing
- Physical facilities and life support in need of attention
- Lack of risk management planning

AZA Conference Proceedings
(AZA Accreditation: Focus on Safety) September 2011
AZA’s Four Required Drills

1. Emergency Evacuation (Fire)
2. Animal Escape and Recapture
3. Severe Weather
4. Guest or Staff Medical Emergency

Mystic Aquarium Safety Committee

- Director, Safety & Security
- Administrative Assistant, Facilities & Capital Projects
- Director, Guest Services
- Dive Safety Officer, Zoological Operations
- Chief Clinical Veterinarian, Animal Care
- Trainer, Penguins
- Volunteer Coordinator, Human Resources
- Aquarist, Fish & Invertebrates
- Outreach Program Manager, Education and Public Conservation Programs
- Maintenance Technician, Facilities
- Trainer, Cetaceans & Pinnipeds
- Reservationist, Ocean Blue Catering
- Stranding Coordinator, Animal Rescue Program
- Herpetologist, Fish & Invertebrates
Professional Development for Non-Safety Staff

- Checklists – Your eyes and ears where you can't always be

- OSHA TIEC
  - NFPA 70E for Electrical Workers
  - Laboratory Safety
  - Transitioning to Less Harmful Chemicals

Radiation Safety Program

- Managed by Chief Clinical Veterinarian

- State Registration

- Personal Dosimetry
Dive Safety Program

- Dive Control Board
- Dive Safety Officer
- Scientific Diving
- Dive Emergency Drills

Food and Alcohol Safety

- On-site food service
- Catering business
- Special events
Knife Safety

- Affected Departments
  - Ocean Blue Catering
  - Husbandry
  - Stranding

- Training
  - Johnson and Whales University

- Sharpening Service

P.D.C.A. Model and Continuous Improvement

Plan Do Check Act

1. Plan
   - Put plans in place to standardise the process & set further review dates
   - Investigate the current situation & understand fully the nature of the problem to be solved

2. Do
   - Act
   - Develop a future state. Implement short-term fixes and long-term plans to eliminate root causes
   - Evaluate the effect of implementation; have actions delivered expected results?
What is a Near-Miss?

“An incident where no property damage and no personal injury were sustained, but where, given a slight shift in time or position, damage and injury easily could have occurred.”

US DOL, OSHA

What is a Near-Miss?

- Close call or near-hit, without injury
- Indicators of potential problems regarding any business system, and have implications outside of safety
Best Practices in Near-Miss Reporting

- Make your near miss reporting systems quick and easy to use
- Positively reinforce near miss reporting
- Provide feedback as quickly as possible on how the near miss report helped
- Consolidate near miss data to show trends and make it usable for specific tasks or types of work
- Celebrate good catches
- Include management near misses and acknowledge management missteps
- Show correlation between near miss reporting and improvements in safety


Our Reporting Form

- Unique name crowd-sourced from Safety Committee
- Addresses potential:
  - Negative guest experience
  - Injury to persons
  - Injury to animal collection
  - Security issues
  - Property damage
  - Environmental incidents
Our Reporting Form

- Five L’s:
  - Literacy - Are forms easy to read and understand?
  - Language - Does the company provide forms in multiple languages if necessary?
  - Length - Are the forms short and to the point?
  - Location - Are they easily accessible to workers?
  - Logistics - Do they enable solutions?


Expanding the Analytical Frame

Most Learning (Single-Loop)
Improvement within an existing system that rests on unchallenged assumptions that are implicit and unchallenged.

Double-Loop Learning
Expanding the analytical frame to explicitly identify and then challenge underlying assumptions.
Safety Perception Survey