A Nautical Industrial Hygiene Story

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OSHA Law of 1970—Assure healthy and safe working conditions for all employees—exemption for self employed, farms and work regulated by other Federal Agencies
Section 21(d)(1) of OSHA Act of 1970

To establish and support cooperative agreements with States...with respect to voluntary efforts that employers may undertake to establish and maintain safe and healthful employment and places of employment
Massachusetts Dept of Labor Standards
On–Site Consultation Program

• Massachusetts Consultation Program–Lawrence, Westborough, Taunton, Springfield, Boston
• 5 Safety Professional (CSP)
• 7 Industrial Hygienists (CIH)
On-Site Surveys

• Provided at the employers request
• Free (10% State Funding / 90% Federal Funding)
• Confidential
• No penalties or fines (unlike OSHA)
Consultative surveys involve:

• Request from employer for scheduled visit
• Opening conference and walk-through survey
• Monitoring and Closing Conference
• Written report and Abatement verification
Steam Ship NOBSKA (note door opening on ship)

- Built in 1925 at Bath, ME
- Unique steam engine
- 210 ft long
- “Elegant”
- 14 knots
Passenger Travel between Cape Cod Islands till 1973
Sent to Baltimore as floating Restaurant in 1978–1988
SS Nobska sent to Dry Dock #1 in 1996—stayed for ten years
This stone and metal structure is Dry Dock 1, completed in 1833. As one of America's first two granite dry docks, Dry Dock 1 made the repair of large naval ships faster, easier, and safer.

Returning warships to sea duty in less time was a crucial gain for a young nation with a limited budget and a small navy. Costing more than $1.5 million, the dry docks here in Charleston and in Norfolk, Virginia, were the largest civil works projects the federal government had ever undertaken. They proved that the nation was prepared to use its navy to protect its overseas trade.

The first vessel to enter Dry Dock 1 for repairs was USS Constitution in 1833. Today, Dry Dock 1, a working pioneer, is preserved as a National Historic Civil Engineering Landmark.

Commi Baldwin (1780-1838), Chester Harding
Chief Engineer Baldwin adapted concepts he had observed in Europe to design a dry dock complex that functioned as one large mechanism.

Dry Dock Plan, signed “Nov. 4, 1828, L. Baldwin” Baldwin's innovative plan used the yard's first steam engine, 16 large pumps to empty the dock's basin, and a floating gate that sealed the dock from the sea.

1851: USS Constellation in Dry Dock. In the dry basin, keel blocks and supports held the vessel upright with its entire hull exposed. Workers could then quickly replace planking and re-caulk and re-copper the ship's bottom.

1961: USS Fred T. Berry in Dry Dock 1. The techniques of dry-docking, as well as Dry Dock 1 itself, are still in use today.
1. The large gate at the harbor end of the dry dock is a caisson, partially filled with water. The dry dock is filled with sea water by opening pipes through the caisson which allow water to flow from the harbor into the dry dock.

2. Water is pumped out of the caisson, allowing it to float and be towed away.

3. A ship is brought in and lined up above keel blocks.

4. The caisson is replaced and flooded to seal the end of the dry dock. The water in the dry dock is pumped out, and the ship is left cradled and dry.
Ship Building & Repair

- Dry docking and Launching
- Fabricating and Repairing Structural Components
- Handling Large Materials
- Outfitting
- Painting
- Surface Preparation and Descaling
All Types of Industrial Hygiene and Safety Hazards
OSHA Shipyard and Industry Regulations

- 29 CFR 1915
- **Subpart A**–General Provisions
- **Subpart B**–Confined and Enclosed Spaces and Other Dangerous Atmospheres
- **Subpart C**–Surface Preparation and Preservation
- **Subpart D**–Welding, Cutting and Heating
- **Subpart E**–Scaffolds, Ladders and Other Working Surfaces
- **Subpart F**–General Working Conditions
OSHA Shipyard and Industry Regulations

- 29 CFR 1915—CONTINUED
- Subpart G—Gear Handling and Equipment for Rigging and Materials Handling
- Subpart H—Tools and Related Equipment
- Subpart L—Personal Protective Equipment
- Subpart J—Ship’s Machinery and Piping Systems
- Subpart K—Portable, Unifired Pressured Vessels, Drums, and Containers, Other Ship’s Equipment
OSHA Shipyard and Industry Regulations

- 29 CFR 1915—CONTINUED
- Subpart P—Fire Protection in Shipyard Equipment
- Subpart Z—Toxic and Hazardous Substances
UNIQUE Industrial Hygiene Items examined for SS Nobska in 1998

- Lead Exposure
- Confined Space
- Scaffolding
- Hearing Protection
- PPE
- Welding Exposure
- Heat Stress
HEALTH AND SAFETY SHIPYARD QUALITY CONTROL CHECK

Check Scaffolding
Check Welding/Noise Exposure
Check Evacuation Plans
Check Hot Work
Check Fire Safety
Check PPE
Industrial Hygiene Outcomes for SS Nobska in 1998

- Resolution of Blood Lead Monitoring
- Isolated Eating Area
- Audiometric testing
- Monitoring Confined Spaces
- Upgrade of Respirators
- Training
Financial Problems lead to scrapping of SS Nobska in 2006
Interaction with other Professionals

Fourth Year Harvard Medical Student—Marine Chemist—Naval Architect—Park Service Employees—Welders—Steam Ship Foundation—Navy Employees
SS Nobska no longer around but whistle still exists on MV Eagle on Cape Cod

Youtube: Nobska whistle
OSHA and Other Resources:

Resources (cont)

- Patty’s Industrial Hygiene and Toxicology, Vol II., 1978.
- Shipyard Confined Space Ventilation OSHA etools
The Cure for anything is saltwater: sweat, tears, or the sea
Danish writer: ISAK DINESEN