
HEALTH AND SAFETY ISSUES
IN THE WATER INDUSTRY

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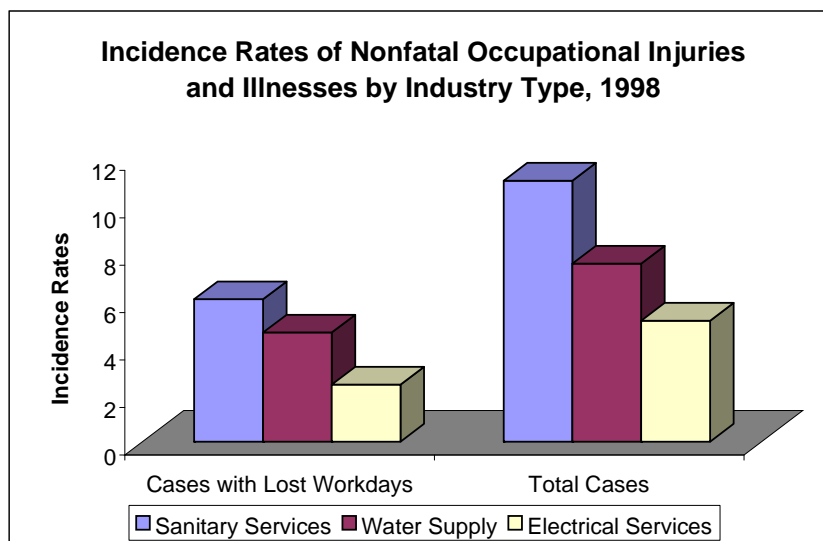
Introduction

Water supply systems around the world are subject to the effects of work-related accidents and environmental health-related illnesses. Injuries and illnesses can result in lost productivity, increased worker's compensation cost, and poor employee morale. Regulatory non-compliance can result in expensive penalties and reduced consumer confidence in the utility.

Applied EHS Management, Inc. (Applied EHS) staff led a Workshop on Emerging Health and Safety Issues in the Water Industry for the Awwa Research Foundation in 2001. The ultimate goal was to identify emerging health and safety issues as well as future health and safety research needs for the water industry. This paper summarizes the foundation of the problem and the results of the Workshop.

The Problem

Injury/illness data from a variety of sources was evaluated, including the Bureau of Labor Statistics, National Safety Council and survey data collected by American Water Works Association (Awwa) Health and Safety Committee. The figure below illustrates the overriding finding that injury rates are significantly higher in the water industry than in other utilities.



Other conclusions of the study include:

- Electric utilities have significantly lower incident and severity rates than water utilities.
- “Combined” utilities incident and severity rates are also significantly lower than for water utilities, but not necessarily as low as for Electric utilities.
- The lower incident and severity rates for the Electric and Combined utilities leads to the following potential hypotheses for explaining the difference in rates:
 - *Although electric utilities have more acute inherent hazards (i.e., work at heights, high voltage), water utilities do construction and repair of underground lines (i.e., tight spaces, manual lifting, cave in, etc.) more often.*
 - *Safety culture may be stronger and resource levels may be higher in the Electric Utilities than in water utilities, potentially due to the higher inherent hazard of high voltage and/or the average larger size of the organizations.*
 - *Non-OSHA states (over 20 states) have higher rates for public water systems because they are not subject to OSHA-type regulations.*

This latter hypothesis has apparently been confirmed in a recent Department of Labor audit of OSHA coverage of state and local workers.

Health & Safety Research Directions

The Health & Safety Emerging Issues Workshop identified the following research priorities for the water industry:

- Effective Techniques for Prevention of Lower Back and Shoulder Injuries and Other MSDs.
- Best Practices for Integrating H&S into Design and Operation of Water Systems.
- Establishing the Full Costs of Injuries/Illnesses and Evaluating the Cost/Benefit of Prevention Programs.
- National Water OSH Database: Feasibility and Pilot of Benchmarking Consortium.
- Evaluating the Effectiveness of Alternate Enforcement Methods and Approaches.
- Effective Infrastructure Protection Techniques for Water Systems.
- Understanding the Effects of Human Factors on Safety Performance.
- Effects of Chronic Low Level Chlorine/Hypochlorite Exposures at Water Utilities.

Established Health & Safety Issues

Many water/wastewater organizations have not effectively managed the basics of health and safety for a variety of reasons, including:

- Government operations in non-OSHA Plan states have little incentive to pay attention to health and safety, due to the absence of enforcement.

- Many water/wastewater utilities have put increasing time and attention into security and evolving clean water/wastewater requirements. Although not stated, safety is often the lowest priority.
- Small and mid-sized organizations often have no professional health and safety staff and rely on untrained Human Resources or other management staff to “wear another hat”.
- Management often does not track the cost of injuries and illnesses that can be reduced through effective health and safety programs.

Those water/wastewater organizations that place a priority on health and safety often have had serious or fatal accidents or have been subject to notices of violation. When not faced with those events, it requires strong leadership to champion an effective health and safety program.

Water/wastewater utilities are generally most exposed in the following areas:

- Traffic work zone safety.
- Excavation.
- Lockout/tagout for control of hazardous energy.
- Machine guarding.
- Arc flash and electrical safety.
- Lifting and back injury.
- Crane inspection and maintenance.
- Railings and fall protection.
- Confined space entry.
- Hearing protection.
- Emergency Response planning and EPCRA Tier II reporting.
- Management of “legacy” contaminants (e.g., lead, asbestos, PCBs, mercury).

Health and Safety Solutions for Your Organization

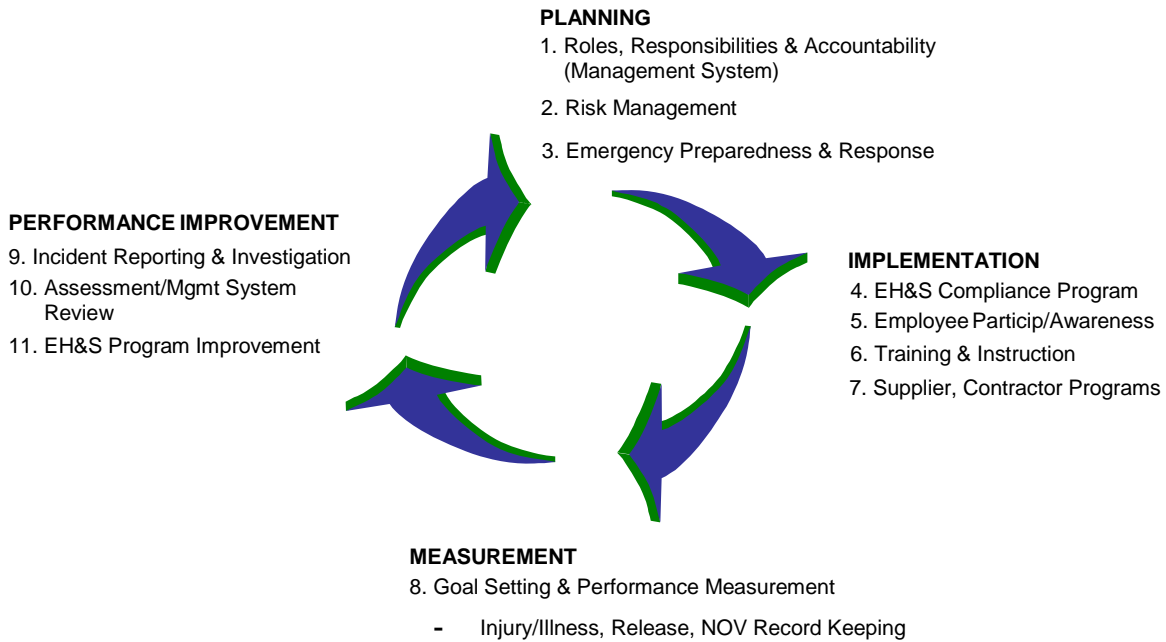
Industry is currently regulated by more than 4,000 OSHA and EPA regulations that are always changing. New regulations are continuously being added, while old regulations are being revised. These regulations are designed and intended to eliminate unsafe conditions in the workplace and protect the environment.

It can be difficult to decide where to begin at some facilities, given the organization’s history and culture. No two organizations are alike, and it is probable that your facility already has some effective programs in place, although it may not be perfectly clear just how far you should go and how much value the upgrades have in terms of reducing your risk.

While compliance is important, simply complying with OSHA regulations is not always enough to minimize accident occurrence in the workplace with their associated costs. In order to protect the health and safety of your employees in the workplace it is

necessary to develop a safety program to identify site-specific hazards and safety deficiencies on an ongoing basis and address them.

A management system with integral employee involvement is the most effective framework for planning, implementation, measurement, and performance improvement to manage environmental, health & safety risks and ensure that your EH&S policy and vision are fulfilled. This Management System concept is illustrated in below.



EH&S Management System Model

Although strong environmental health and safety programs require a considerable management and monetary commitment, many progressive industries have demonstrated that such a commitment will save money, maximize profits, prevent injuries, save lives, and preserve natural resources in the long run.

Teaming management and supervisory staff with seasoned professionals can result in tailoring programs that meet the specific needs and philosophy of your organization. An off-the-shelf approach without the participation and buy-in of critical supervisory staff is generally less effective because most staff with 10, 20 and 30 years of experience will simply continue to do things the way they are used to doing them.

Develop a long-range plan, set goals, and continually communicate that management is serious about the program – not just with word, but with actions. Be a safety presence and advocate in the field and expect your supervisory staff to do the same. These are the key success factors to improve your safety practices and reduce injuries and illnesses.

About Applied EHS

Applied EHS staff has a wealth of Health and Safety management experience in an operations environment with a broad range of industries. This includes extensive experience with both power and water/wastewater utilities and years of experience and leadership in AWWA and AwwaRF.

Our focus on health and safety services is to partner with your operation and design programs to protect employees that are compliant, performance-based and usable. Our field-experienced specialists have managed safety programs at operating industrial and government facilities and remediation sites. From regulatory compliance to management oversight, our staff has the skill, training, and experience necessary to develop and implement effective environmental health and safety programs.

Applied EHS' expertise also includes infrastructure protection, security and assessment/planning for earthquakes, tornadoes, hurricanes, floods, and accidental chemical releases. We've developed methods and models to assess the risk from these hazards and have developed and implemented plans and mitigation measures to protect facilities against their occurrence.

Services Offered

The following is a summary of our services.

- *Safety Management Programs*
- *H&S Manuals*
- *PPE Assessments and JSAs*
- *Noise Assessments*
- *Bloodborne Pathogens ECPs*
- *LOTO Energy Control Procedures*
- *Emergency Plans and Exercises*
- *Audits and Compliance Plans*
- *Training Program Development/Training*
- *Respiratory Exposure Assessments*
- *Confined Space Evaluation*
- *Permits and Registrations*
- *Security Vulnerability Assessment & Plans*
- *Process Safety Mgmt./RMP*

Also see our website at www.appliedehs.com.

About the author: Peter S. Puglionesi, founder and President of Applied EHS Management, Inc., led the development of AwwaRF's *Compliance Guidance and Model Risk Management Program for WTPs* and participated in writing the Center for Chemical Process Safety's *Technical Planning for On-Site Emergencies* book. He has served on/chaired numerous AWWA committees including the H&S, Hazmat, Security, and Operational Risk Committees. He has provided safety program development and audit services, conducted hazard analyses, assisted in implementing health and safety program requirements and provided workshops and training for organizations as large as 6,000 employees and over 400 facilities.