

ENVIRONMENTAL MANAGEMENT SYSTEMS AT PORTS—A NEW INITIATIVE

*C. James Kruse, Texas Transportation Institute, Center for Ports & Waterways,
and Sea Grant College Program*

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INTRODUCTION

Public ports develop and maintain the shoreside facilities for the intermodal transfer of cargo between ships, barges, trucks, and railroads. Ports also build and maintain cruise terminals for the cruise passenger industry. Additionally, the U.S. military depends on numerous ports to serve as bases of operation and to deploy troops and equipment during national emergencies. The challenge is to help the nation's 85 deepwater ports and their trade partners minimize their environmental footprint, even as they grow (i.e., to be economically viable, environmentally sustainable, and socially responsible).

An Environmental Management System (EMS) is a tool that can help ports meet the goal of providing a healthy environment for their citizens AND be good stewards of public funds in promoting economic development. The EMS framework can also be used to support continual improvement in other functional areas such as health and safety, security, operational efficiency, and community relations.

ENVIRONMENTAL MANAGEMENT SYSTEMS

An EMS is a systematic approach to evaluate, manage, and improve the environmental impacts of an organization. While each EMS is unique, the most commonly used framework is the International Standards Organization (ISO) 14001 Standard. The system examines the environmental aspects of the organization, then develops, implements, monitors, reviews, and revises environmental programs and procedures to continually promote improvement. (1)

The expected benefits of an effective EMS system are the following (1):

- Demonstrate leadership in environmental protection
- Enhance credibility and public image
- Reduce cost and improve efficiency
- Lower environmental liability and improve insurance coverage
- Improve emergency response capability
- Increase staff awareness, competency, involvement and morale
- Establish common management framework to integrate other port objectives such as safety, security, operational efficiency and community relations

Ports that implement an EMS can experience cost savings—even within the preliminary stages of EMS development and implementation—by identifying pollution prevention initiatives, potential liabilities, and opportunities to reduce risks.

In looking at prior experience with 23 public entities, the sponsors of the EMS Assistance Project learned that the average resources used came to \$95,275 over two years and the average number of hours invested came to 3,074 labor hours for the same period. (2)

EMS ASSISTANCE PROJECT

The Global Environment & Technology Foundation (GETF), in partnership with the American Association of Port Authorities (AAPA) and the U.S. Environmental Protection Agency (EPA), recently began a two year project in which 11 ports (9 of which are public port authorities) were chosen to receive EMS training, mentoring and technical assistance in improving their environmental performance. The Project is a comprehensive approach that includes training materials, implementation tools, technical assistance, five workshops, bi-weekly calls, monthly conference calls, two on-site visits, outreach templates, articles, and contacts with peers and mentors. Participating ports share the cost of this project at \$45,000 total per participant over the two-year period. Travel and labor costs necessary for attending up to five project workshops and developing EMS work products are the responsibility of each participant. Additionally, the initiative acquired seed money through a \$50,000 grant from EPA.

PROJECT SPONSORS

Three separate entities have joined forces to implement the EMS Assistance Project:

American Association of Port Authorities: AAPA is an alliance of leading ports in the Western Hemisphere. Prior initiatives of AAPA include the 1998 Environmental Management Handbook and a Case Studies Database that includes AAPA Environmental Award nominations, seminar presentations, newsletters, and other organizations.

EPA's Office of Policy, Economics, and Innovation: EPA is partnering with the port industry through its Sector Strategies Program (SSP) to promote EMSs. In addition, the SSP is providing a sector point-of-contact within EPA to assist in resolving regulatory or other barriers to performance improvement, and to facilitate the measurement and reporting of environmental performance information.

Global Environment and Technology Foundation: GETF is a Virginia-based 501(c)(3) not-for-profit dedicated to building infrastructure for sustainable development. It provides EMS training and support to public entities.

KEY ENVIRONMENTAL OPPORTUNITIES

Reducing Air Emissions: Marine vessels, land-based cargo-handling equipment, trucks, and trains all contribute to air emissions at ports. Common air pollutants include particulate matter (PM), nitrogen oxides (NOx), and sulfur oxides (SOx).

Improving Water Quality: Most large ports have hundreds of acres of paved waterfront property for cargo handling, where stormwater runoff may pick up various pollutants before entering waterways. Also, ballast water onboard calling vessels is typically

released in a different geographic area than where it was taken in, resulting in the introduction of non-native or invasive species.

Minimizing Impacts of Growth: Surrounding communities are increasingly interested in the impacts of port expansion, such as wetland or habitat loss, handling of sediment from dredging operations, congestion, safety, and other impacts of port growth.

PARTICIPATING PORTS

The initial nine public port participants, chosen through a competitive application process, are: Port of Houston Authority, Virginia Port Authority, Port Authority of New York & New Jersey, Port of Portland (OR), Port of Corpus Christi Authority, Port of Los Angeles, Port of New Orleans, Port Everglades, and Port of Vancouver (WA). Two ports—Port of Houston Authority and Port of Portland (Oregon)—already had an EMS in place prior to joining the project, but are using the project to expand and improve their programs. A third port, Massachusetts Port Authority, also has an EMS, but was not included in the project. Upon completion of the project, each participating port will be ready to pursue certification to the ISO 14001 standard.

Some interesting insights can be gained by looking at some of the port authority experiences to date:

HOUSTON

Following its selection by EPA in March 2000 as one of 14 public entities to participate in a pilot program to develop an EMS, the Port of Houston Authority (PHA) developed and implemented a program that concentrates on increasing recycling and reducing air emissions. To reduce emissions and improve air quality, the port tested PuriNOX, a Lubrizol diesel emulsion product, on yard tractors and rubber tire gantry cranes. Emission testing results showed a 25 percent reduction in nitrogen oxide levels and a 30 percent reduction in particulate matter. In addition, the port collaborated with the Texas Council on Environmental Quality to reduce its use of absorbents by 50 percent to meet the EMS objective. (3)

PHA adopted an EMS at its Barbours Cut (container) Terminal and Central Maintenance facilities in 2002. Later that year PHA became the first port in the country to receive ISO 14001 certification at any of its facilities. The benefits of the EMS have positioned the port as an international leader in environmental stewardship (2):

- Reduced NOx by 25% in crane and yard truck fleet
- Reduced 5,000 pounds of waste (58% reduction)
- 47% decrease in stormwater constituents
- Reduced absorbent disposal by 75%
- Eliminated the disposal of oily rags
- 20% reduction in insurance cost post-9/11
(investment of \$97,256)

Several port employees, under their own initiative, created in-house devices towards meeting these goals--devices such as a scrap metal collection machine, stormwater skimmer, and an absorbent recycler.

NEW YORK/NEW JERSEY

The Port Authority is exploring ways to reduce emissions associated with port maritime activities. For example:

- The port is retrofitting the diesel engine of one of the Staten Island Ferries with a selective catalytic reduction system in order to reduce NOx emissions. The port is also transitioning the ferry to ultra-low sulfur fuel to reduce SOx and PM emissions. If the test is successful, the port will make similar changes to all of its ferries, for an expected reduction of 400 to 800 tons per year of NOx emissions.
- The port is replacing the diesel engine used by one of the small tugboats in the harbor with a new low-emissions diesel engine. If the initial test is successful, a larger tug will be re-powered and tested. (4)

PORTLAND

The Port of Portland, OR, has developed a Natural Resource Assessment and Management Plan (NRAMP), the first comprehensive environmental data system of its kind. Through NRAMP, the port has created ecological maps of all port-owned properties, which can be used to identify the natural resources and wildlife habitats present in these areas.

Advantages of the Port's EMS include having the ability to design projects so environmental impacts are avoided or minimized; guide environmental stewardship efforts across all Port operations; focus environmental initiatives on areas of greatest impact; manage and measure success of environmental programs; and drive continuous improvement of environmental practices. The system will decrease planning costs for future development by reducing the amount of data that has to be collected for each new project and helping to avoid delays during land development. The EMS has demonstrated substantial cost savings and reduced delays in working with regulatory agencies.

Since establishing the EMS, the port has integrated environmental considerations into all Port operations including Aviation, Marine, Navigation, and Property and Development. The EMS also facilitated development of a Partnership Grant Program which awards grants to non-profit environmental organizations and educational institutions whose proposed projects support the Port's mission while protecting and enhancing the region's natural surroundings. In the first year after implementation of the EMS, the port awarded more than \$70,000 to environmental advocacy groups. (5)

EVERGLADES

The Port's initial goals are to reduce waste, use more friendly environmental products, and continue to establish an environmental policy that can be utilized by the port's tenants and contractors. As a "landlord" seaport, Port Everglades already has adopted environmental protection regulations that are part of its contracts with tenants. The EMS program will allow the port to augment its existing programs and formalize its environmental procedures and guidelines

LOS ANGELES

The Port is currently implementing the EMS within its Construction and Maintenance facilities, with the goal of expanding the EMS to additional functions over the course of the next several years.

The EMS will include existing initiatives such as the voluntary Vessel Speed Reduction program, the Source Control program, the Least Tern Nesting Site Agreement, the Hazardous Materials Management Policy, and the Clean Engines and Fuels Policy. It will also encompass new initiatives, including a pilot program with the Port's Construction and Maintenance Division, a Clean Marina Program, and a voluntary pilot program by one of the Port's customers.

BOSTON (MASSACHUSETTS PORT AUTHORITY, *non-participant*)

In December 2003, the Port of Boston, MA, Conley Container Terminal received ISO 14001 certification, becoming the second certified U.S. public port facility (after Port of Houston). As part of its EMS, the terminal has set performance improvement objectives in eight areas: hazardous waste, wastewater, stormwater, construction waste, resource use, air emissions, spills, and noise. Initial targets include establishing baselines from which to measure progress, performing evaluations, and conducting outreach efforts.

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C. James Kruse
Center for Ports and Waterways
Texas Transportation Institute
701 N. Post Oak, Suite 430
Houston, TX 77024
Phone: (713) 686-2971
E-mail: j-kruse@ttimail.tamu.edu