A Guide to EMIS Functions, Benefits & Trends

The Problem

Many companies do not have adequate systems in place to meet current and future needs for sustainability performance plus maintain focus on environmental compliance management. Manual, unlinked, and disparate systems (such as spreadsheets or niche, internally built tools) are expensive, difficult to use, and do not provide real-time or comprehensive information in an easy-to-analyze format. Creating reports for internal and external use, or researching regulatory data in multiple systems, is a very time-consuming and inaccurate process. In marked contrast, EHS (Environment, Health and Safety) EMIS (Environmental Management Information System) solutions are more cost-effective over time, providing comprehensive, meaningful, and real-time information that enables users to quickly analyze their processes and make better management decisions.

EMIS software enables companies in a wide range of industries to better measure and manage air emissions, incidents, and a variety of other key environmental data. EMISs provide early indicators of problems that otherwise might have caused major issues, such as accidents, production downtime, and regulatory violations. EMISs also help meet increasingly restrictive and onerous environmental compliance regulations.

What EMISs Can Do

According to the Verdantix Green Quadrant report for EHS software, budgets for EHS software are growing in double digits. Common EHS functions play a leading role in selecting and funding EHS software. The specific capabilities and areas of functionality that EHS leaders look for when evaluating offerings include the following:

- **Aggregating EHS data in a single, auditable database**
  In spite of the wide-ranging capabilities offered from software providers, establishing a single repository for managing a firm’s global EHS data is the main benefit from deploying software. For implementers of EMIS software, this represents a significant step up from managing their data via multiple spreadsheets, custom-built databases, and paper log books.

- **Enhancing reporting capabilities to reduce the risk of noncompliance**
  Fulfilling regulatory requirements and compliance reporting remains a primary reason for investing in EHS software. Significant financial and reputational risks can be associated with noncompliance, and these fines can dwarf the costs of software licenses.

- **Combining traditional EHS data with new sustainability metrics**
  EHS’ function is becoming increasingly responsible for measuring sustainability metrics. Most require software to manage GHG emissions, as well as management capabilities for water, waste, and air emissions.
• **Regulatory monitoring and solving specific EHS business process issues**

Regulatory compliance remains the primary motivator for investment in EHS software solutions. This drives investment in specific modules on an incremental basis, to solve particular requirements as they arise, but mostly to identify rule changes that could impact compliance programs and operations. U.S. utilities, for example, need to comply with Mercury and Air Toxics Standards.

**Understanding EMIS Return On Investment**

Overall productivity savings of a typical midsized EMIS software deployment can be significant. An ROI (Return on Investment) model allows clients to estimate savings related to various tactical activities. This kind of tool is an activity-based model that allows clients to estimate savings by activity for each module, with summary results.

The following points are general examples of key operational benefits clients can expect as a result of using a centralized EMIS system:

- 15-20% higher productivity (efficient use of existing resources and avoid new hires).
- Greater data accountability at the site level eliminates time wasted by corporate environmental staff following up on missing data or incomplete tasks, which can lead to violations and fines.
- Efficient data archiving and retrieval eliminates time wasted searching for records.
- Lower consulting costs as manual data collection and reporting processes are replaced.
- Lower travel costs as staff is able to review site-level reports and records online.
- Higher production output due to more accurate environmental data.

**EMIS Solutions Replace Disparate Spreadsheets: Finally!**

Spreadsheets are used by most enterprises to support critical business functions. They are powerful and effective for small groups but are often problematic for enterprise-wide collaboration. Errors are caused by disparate data collection efforts, re-keying of data, and complex data input screens. And, while regulatory agencies are increasingly sophisticated at tracking compliance enforcement, spreadsheet errors become easily identifiable and costly to industry. It is also problematic to link regulatory requirements in a spreadsheet to the date changes, of which there are hundreds a day, in the U.S. alone.

EHS departments in highly regulated industries must comply with more requirements than ever, and are more heavily scrutinized by federal and state regulatory authorities. Regulators look for discrepancies among EI (Emissions Inventory), Tier II, TRI (Toxic Release Inventory), GHG (Greenhouse Gas), and other reports to identify areas of concern. Highly regulated enterprises must have robust systems in place to respond to increasing scrutiny and ever-changing requirements.
Identifying and mitigating risks can only be done properly with complete and consistent data, streamlined data collection, and real-time report visibility coupled with up-to-date regulatory developments. Critical data include operations information, emission factors, audits, corrective actions, final-rule changes, calculations, and more. Mistakes in these data-intensive areas can be costly, causing fines and penalties.

With increasing regulatory scrutiny and risk, changing requirements, and costly spreadsheet errors, companies are implementing EHS EMISs. EMISs increase data consistency, provide real-time operational visibility and regulatory updates, reduce work, and mitigate risk for highly regulated enterprises.

<table>
<thead>
<tr>
<th>EMIS</th>
<th>Spreadsheets</th>
</tr>
</thead>
<tbody>
<tr>
<td>One current system of record</td>
<td>Data Centralization</td>
</tr>
<tr>
<td>Real-time dashboards</td>
<td>Reporting</td>
</tr>
<tr>
<td>Immediate &amp; broad</td>
<td>Visibility</td>
</tr>
<tr>
<td>Dynamic workflow</td>
<td>Process</td>
</tr>
<tr>
<td>One-time entry/data feeds</td>
<td>Data Accuracy</td>
</tr>
<tr>
<td>Evergreen regulatory updates</td>
<td>Timely</td>
</tr>
<tr>
<td>Fast and intuitive</td>
<td>Ease of Use</td>
</tr>
</tbody>
</table>

**Applicability Is Key To Success**

EMIS solutions manage applicability for every level of an organization to deliver targeted, mission critical content to EMIS users. When organizations acquire and use chemicals, for example, dozens of EHS provisions are triggered. The regulations are intended to ensure that those chemicals are managed safely. Since there is no unified chemical-handling law, the only place that compliance requirements come together is at regulated organizations. Identifying, understanding and complying with the associated regulations are the responsibilities of EHS.

The provisions that apply to an organization’s activities depend on which chemicals are used, how much, and how they are used. The range of EHS requirements cover chemical acquisition, chemical use, and post-use management of chemical waste. They are best described in content publications, including applicability tables, score sheets, checklists, case studies, and question-and-answer formats. In fact, the number and range of tools and information sources is extensive, and expert help is needed to assess requirements and implement the most useful information into EHS compliance processes.
An applicability assistance process provides a vetted methodology, consisting of the following: identifying content requirements; documenting gaps in regulatory content usage; identifying opportunities to leverage applicable content for audits, task management, and reporting; and helping to implement applicable content into EHS processes. Advanced applicability solutions provide the following key advantages:

- Assess and prioritize a facility’s compliance with all applicable federal and state environmental regulations.
- Customized audits, which enables the user to select just the content that applies to the facility being audited.
- Integration of state questions with relevant federal requirements, at the right point in the audit checklist.
- Provides detailed instructions, auditor guide notes, field-tested checklists, and accurate quarterly updates.
- Links directly to the text of any relevant federal or state citation.
- Provides on-going analysis and updates to applicable laws and regulations.
Leveraging Modern Technology

Current internal processes and tools are cumbersome and error-prone, and software built with old technology has proven to be expensive to implement, specialized for narrow purposes and hard to use. Modern EHS EMISs leverage key technologies to increase usability, including the following:

- **Dashboards for immediate visualization of data**: Effective EMIS dashboards should be designed for the masses. Everyday heavy and casual users, line workers, and management staff should quickly assess critical real-time information with a few mouse-clicks.

- **Advanced document management**: EHS is document-intensive, and EMIS platforms should embed or connect to a full-featured document management platform. Any file type would be stored – permits, CAD drawings, photos, etc. A powerful workflow engine allows users to route a report or document to key need-to-know individuals. Clients can track in real-time who is reviewing a document, what is the status, and who has signed off.

- **Highly intuitive user interface for efficient system navigation**: An effective EMIS user interface should provide clean and simple screens, including a “bread crumb” trail as the user navigates through the software, so they always know where they are and can easily skip back to previous screens with one click. Convenient links allow users to quickly navigate between system modules. EMISs should use easy to view layouts, keep the screens clean and uncluttered, and provide short cuts to make the system experience quick and easy.

- **Secure integration for safe, simple, and streamlined data management**: In the emerging world of cloud-based EMIS solutions, the typical weak link is EMIS integration with various applications that provide data. Integration behind the firewall creates a “pull” approach, which enables high-volume data to be extracted and transformed from many heterogeneous client systems, such as StackVision or PI.

- **Regulatory data integration for automatic regulatory updates mapped to compliance obligations**: Integration of compliance data, i.e., full-text regulatory content, change-tracking, analysis, monitoring reports, and auditing content are becoming must-haves for successful EMIS implementation. Using standard web services and API’s (Application Program Interface), end-users of an EMIS can rely upon their provider to give them access to applicable content and keep that content evergreen. Most EMIS providers now have some degree of EHS content integration with one or more providers. This advancement in the technology has led to a much faster implementation of EMISs and fostered user loyalty, thus lowering the cost of adoption.

**Mobility Is Changing Compliance Management**

Much of data collection for compliance takes place at remote facilities or in the field, so it’s important to incorporate mobility into today’s EHS EMIS. Many EMIS software systems have built mobility into their solutions for business-oriented functions, such as compliance audits or
inspections, which typically take place in the field. These mobile applications are changing compliance functions by streamlining key business processes and increasing access to data.

Many companies that are subject to regulatory compliance have complex operations with multiple locations and facilities, often in different states, regions, or countries. While compliance plans are developed to manage these complex needs, technology often does not support the required data collection related to certain business processes, and remote data must be converted into meaningful and report-ready information. As a result, businesses lose time and possibly data integrity by transporting data, often collected in spreadsheets or on paper, from the field to the office for manual data input.

Fortunately, EMIS solutions are evolving to enable mobile data collection to be incorporated into existing compliance management processes, increasing the accessibility and efficiency of data collection. With powerful compliance management systems, which incorporate mobility, business process functions can be streamlined, providing field-based users with exactly what they need in the field, on their mobile device.

An EMIS Reduces The Burden Of Air Emissions Reporting

Electronic reporting of air emissions inventory can be complicated, if not overwhelming. In addition, requirements and reporting systems can differ drastically on a state-by-state basis, preventing best practices and standards from emerging. Is your company ready to meet the challenge? One utility company met the challenge by automating air emissions inventory.

One of the largest competitive electric generators, in one of the largest consuming states, the utility started with an overall project goal: Implement a new software solution to manage the air EI and TRI. The company’s current inventory was tracked using a series of spreadsheets and linked worksheets. It needed to streamline the process, while minimizing human error.

The abovementioned utility selected an EMIS for data processing, electronic file creation, and submittal to the appropriate agencies. The EMIS also provided task management to manage the collection of data and management of inventory collection milestones. The client had a responsibility to submit six EI electronic reporting files to state electronic reporting systems. With multiple plant sites and units with different configurations, the client needed to combine 126 workbooks worth of information, emissions factors, and calculations into a standardized solution for calculating and reporting emissions inventory. The client also needed to bring consistency to calculation methods.

Electronic reporting of air emissions inventory can seem daunting. However, proper planning and best practices can lead to a successful design and EMIS implementation even for the most complex companies and set of state reporting requirements.
**EMIS Solutions Simplify Hazardous Waste E-Manifest**

Signed in 2012, the Hazardous Waste Electronic Manifest Establishment Act authorized the Environmental Protection Agency to implement a national electronic manifest system for waste handlers to complete, sign, transmit, and store manifest information electronically. EMIS solutions can provide users with the functional tools to manage on-site waste inventory, off-site waste manifest printing, return manifest tracking, rental equipment management tools, and federal and state electronic reporting capabilities. These solutions are also designed to support mobile capabilities, a useful tool when meeting compliance requirements with the new e-Manifest system for submitting manifests and capturing electronic signatures.

**EMIS Solutions Address Succession Planning**

Corporate EHS departments are often faced with the problem of an aging workforce rapidly approaching retirement. Over the last few decades, key EHS personnel have accumulated a wealth of knowledge about regulatory standards that are embedded in files, spreadsheets, or notes stored on individual hard drives or network servers. Companies are highly dependent on this crucial information and risk noncompliance or missing reports, tasks, and activities when key personnel retire. During the rebuilding process, valuable institutional knowledge, key activities, and compliance programs suffer.

One way EHS departments can prevent losing this knowledge is through succession planning. Succession planning entails creating a standard process for compliance, training, and operations. A comprehensive program will normalize and standardize data collection, task identification and completion, risk identification and mitigation, and compliance reporting across multiple facilities.

EHS EMISs play a substantial role in reducing the burden of succession planning and supporting standardization. EMISs can serve as a repository for institutional knowledge. They maintain a central storage location for organizational memory while ensuring the availability and transfer of EHS knowledge to new and existing employees. EMIS solutions support compliance task management, access to regulatory content, monitoring of deviations and noncompliance, tracking of corrective actions, and more.

**Managing Change For EMIS Success**

A lot of time and energy goes into assessing requirements and selecting the right EMIS. Then, there is the effort required to design the system, configure, test, and train users. These project phases are relatively well-known and can result in the development of a successful system. So why do some systems fail after the going live? One common reason is adoption of the system by the end users. Even the best-designed and implemented system loses its value if it is not adopted and used throughout the organization.
To drive the adoption of a new system, the procedures for change must be understood and promoted. This means clearly defining and aggressively following a change management process during all stages of the implementation. Utilizing change management can provide thoughtful planning, a sensitive implementation, as well as consultation with, and involvement of, the people most affected by the change. These people are the ones who will use the system on a daily basis.

Staff concerns and "pushback" regarding change are very common in any organization. According to a Deloitte survey of chief information officers, the top reasons that new programs fail are (1) Resistance by employees (2) Inadequate sponsorship, and (3) Unrealistic expectations. So how do we overcome the resistance to change through organizational change management?

Organizational change management is a process that starts at project initiation and is included in every step of the system implementation. It involves first forming a powerful guiding coalition of staff from all levels in the organization. Next, a vision must be developed and documented in a written plan. The plan must accomplish the following:

- Communicate the project vision
- Create buy-in and empower others to act
- Focus on quick wins that can be shared with the organization
- Map the steps to sustain and institutionalize change

As highlighted in a recent discussion by E2 ManageTech, organizational change management is about communicating the logic behind the change, involving staff in the decision making, understanding the emotion involved with change, and helping staff to clearly see the benefits.

About the Authors:
Nick Johnson and Don Smith manage JSA Services, a full-service EMIS consultancy, providing the following services: project planning, needs assessment, implementation, and continuous improvement. Nick Johnson brings 15 years of experience as a recognized industry leader in providing EMIS selection, planning and implementation services. Don Smith brings 30 years of experience in client needs analysis and a consultative approach to technology solution acquisition. For 10 years, Don has focused on EHS solutions, and provides expertise in vendor selection, vendor business management and technology alternatives. He has a master’s degree in Business Administration from Golden Gate University, San Francisco, CA.

Margery A. Moore is director of business development with Bloomberg BNA. She manages third-party platform integrations with Bloomberg BNA’s proprietary Environment, Health and Safety content, including regulatory monitoring, full-text compliance guidance, news, and other business-critical information, practical guidance, and workflow solutions. Bloomberg BNA leverages leading technology and a global network of experts to deliver a unique combination of news and authoritative analysis, comprehensive research solutions, innovative practice tools, and proprietary business data and analytics. Bloomberg BNA is wholly owned by Bloomberg L.P., the global business, financial information and news leader.
For more information about JSA Services or Bloomberg BNA, please contact:

**Margery A Moore**  
Bloomberg BNA  
Email: Mmoore3@bna.com  
Phone: (202) 494-0534

**Don Smith**  
JSA Services  
Email: dsmith@johnsonsmithandassociates.com  
Phone: (949) 633-4422