EM IT Insight

by Jill Barson Gilbert

Mining EH&S

Organizations rely on a variety of databases to manage the wealth of information they generate, and the number and size of those databases has grown significantly over the past few years. Many enterprisewide business systems are too complex for the casual user to extract meaningful information, and environmental, health, and safety (EH&S) databases are no exception to this trend. These databases, whether interconnected or stand-alone, serve as tremendous stores of business data, but most are not designed for effective reporting and analysis. They simply were not built to retrieve data.

February's column discussed tools and technologies that can facilitate getting data *into* your EH&S management information system (EMIS). This column discusses tools and technologies to get data *out* of the system so that your organization can maximize this resource to improve overall business management.

MANAGE YOUR KNOWLEDGE

You need to have useful data in your system so you can extract data in a functional form for internal use or reporting purposes. The first part of knowledge management is identifying and storing accurate, meaningful data. Then, the challenge is making data available to the enterprise. How do you get the right data to the right people at the right time at the right level of detail?

How do you get the right data to the right people at the right time at the right level of detail?

Too often, EH&S data are used as lagging (backward-looking) metrics; typical reports show what happened over the past month or calendar year. By the time the reports are produced, it's too late to optimize the production process that generates emissions or wastes. A good knowledge management system uses real-time data analysis and leading (forward-looking) metrics.

DIFFERENT USERS, DIFFERENT DATA NEEDS

There are several ways to classify EH&S data reporting, all based on the end users (or recipients) of the data:

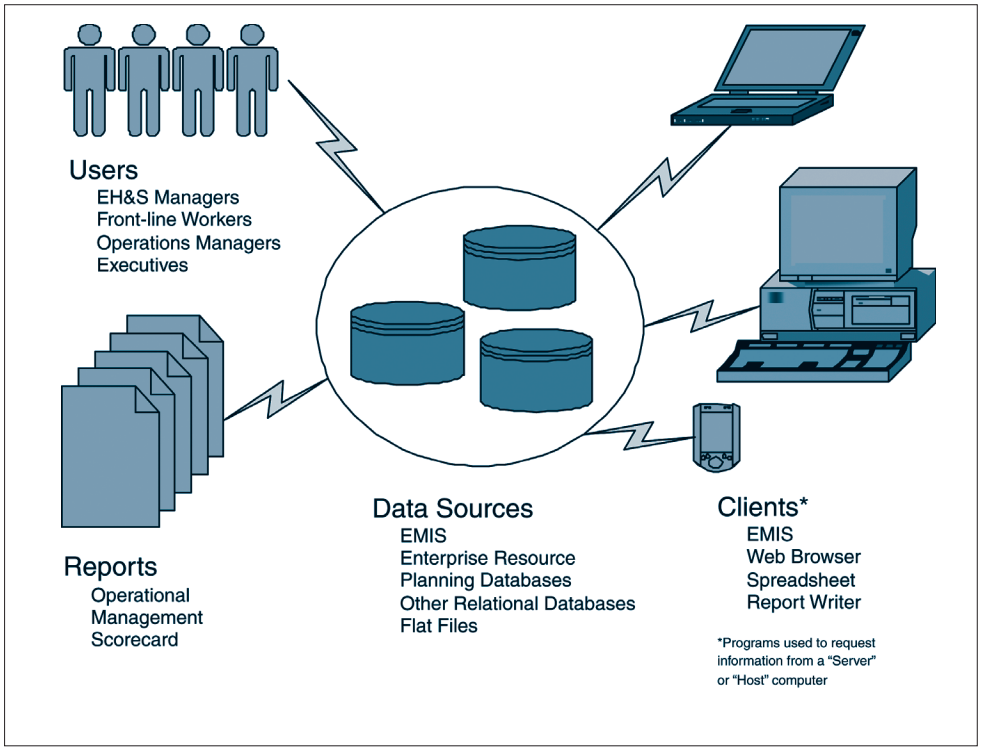
- Internal vs. external reports
- Regulatory vs. nonregulatory reports
- Operational, management, or scorecard reports

The first scheme focuses on whether data are for internal departmental/company use or are provided to external stakeholders, including management, stockholders, or external governmental authorities.

The second scheme focuses on compliance issues. In a regulatory report, a governing body dictates content and/or

format. Examples of regulatory reports include emissions inventories, the SARA Title III Annual Toxic Release Inventory, and hazardous waste manifests. EH&S managers and operations staff use nonregulatory reports to ensure day-to-day compliance, but do not submit them to an agency. EH&S training course lists are an example of nonregulatory reports.

The third classification scheme is more forward-looking and goes beyond compliance. Operational reports, such as equipment lists and chemical lists, support day-to-day tasks and roles. Many of the compliance reports submitted to authorities fall into this category. Management reports enable users to view changes in business metrics over time and analyze trends or exceptions. These reports allow tracking of key performance indicators; examples include ISO 14001 tracking and pollution prevention reports. Scorecard reports help to focus decision-making by distilling multiple business metrics and measures from a number of areas. This type of report helps communicate how a company is progressing in relation to its strategy and goals.



Different users have different data needs. Self-service data extraction tools can serve the needs of diverse users, keeping them connected to the business.

STANDARD, CUSTOM, AND AD HOC REPORTS

A commercial software package may contain numerous standard reports "hard-coded" into the application. No matter how robust the reporting features are, you may need or want something more. Maybe your local agency requires a few extra data fields on the waste manifests or has a different format for monthly discharge monitoring reports. Custom reports can meet these types of demands. Staff skilled in using tools such as Cognos Impromptu or Crystal Reports can develop custom reports that integrate seamlessly with your database. Database end users run these reports the same way they run other reports. If you need the same data repeatedly in the same format, then custom report templates can be constructed to automatically or manually query your system for the required information. For example, corporate staff may need hazardous air pollutant (HAP) emission rates from all facilities to use in commenting on a proposed NESHAP.

If you need a quick view of trends with rolled-up continuous emissions monitoring data, an ad hoc report can help. Whether built-in or separate from your EMIS, ad hoc reports are useful in summarizing trends and rolling up data from

Table 1. Tools and technologies for data extraction.

Tool or Technology	Description	Use and Benefits
Report writer or wizard — integrated with EMIS	• Report tool that launches directly from a software application. • Separate from standard reports that ship with the EMIS.	• Good for quick reports that require minimal formatting. • Useful for "what if" scenarios. • Transparent to the user.
Report writer — separate from EMIS	• Works as a separate "layer" on top of the underlying database. • Examples: Crystal Reports; Cognos Impromptu	• Good for repetitive reports. • Can customize reports to company or agency specifications. • More flexibility. • Does not touch the core EMIS code. • May integrate seamlessly with standard office software. • May connect to numerous PC, OLAP, and SQL databases.
Decision support system	• Multidimensional analysis and reporting tool. • On-Line Analytical Processing (OLAP) • Examples: Crystal Reports; Cognos Impromptu; mySAP; Oracle	• View data "on the fly." • Ability to roll up information from multiple sites. • View data from different perspectives. • "Drill down" detail capabilities. • Displays charts, graphs, trend lines, etc.
Data pump	• Tools to move data from one system to another, or to prepare electronic "flat" files. • Some commercial software packages available. • Typically custom tools.	• Avoids data transcription errors. • Can be designed to move data automatically at set intervals, or to move data on demand.
Web publishing	• Software to publish data and metrics in standard HTML or XML format. • Ultimately, places EH&S data onto Web sites for internal use (intranet) or external use (Internet).	• Many software applications have built-in Web publishing capabilities. • Data available in a universal format. • Data are easily accessed by those you wish to see it.

several facilities. They often have graphic capabilities, including pie charts, bar charts, and trend lines. Ad hoc decision support tools permit online, real-time data processing and allow you to view data from many angles. Such tools help you to examine trends in the data and to "drill down" by business line, geography, or other category. Ad hoc reports are most useful when information needs vary from week to week, and a standard report doesn't fit the bill. Ad hoc reports must be fast and easy, generated "on the fly." Ad hoc reports can be extremely useful for corporate-level professionals making decisions based on trends in business metrics. Also, facility and corporate staff may ask for periodic internal reports to confirm ongoing compliance with one or more applicable requirements.

MINING EH&S DATA GEMS

Too often, EH&S reporting is done with pen and paper, or at best, an isolated spreadsheet or small database tool. Information delivered this way is prone to inaccuracies due to inconsistent data entry, person-to-person data handoffs and transcription errors. A better way to generate reports is to apply tools and technologies to "mine" the data already available in one or more systems within the enterprise.

Table 1 summarizes different tools and technologies in use today to extract and/or publish EH&S data. Each has its own purpose, and most organizations use a combination of these tools and technologies.

Chances are, you have a lot of EH&S data "gems" waiting to be mined. Intelligent EH&S data extraction leverages existing systems and infrastructure to best serve the ultimate users of the information. A good system facilitates information sharing across the business and gets the right data to the right people at the right time at the right level of detail . In addition, it is flexible and contains self-service elements to help meet diverse needs of the enterprise. Data extraction tools coupled with a central data warehouse can be very powerful. Today's tools and technologies can help you retrieve and report data to help you run your business effectively.

About the Author

Jill Barson Gilbert, QEP, is a director with T3, Inc., where she teams with clients to design and implement EH&S data management solutions. She can be reached by phone: (713) 552-0254; or e-mail: *jgilbert@tthree.com.*