



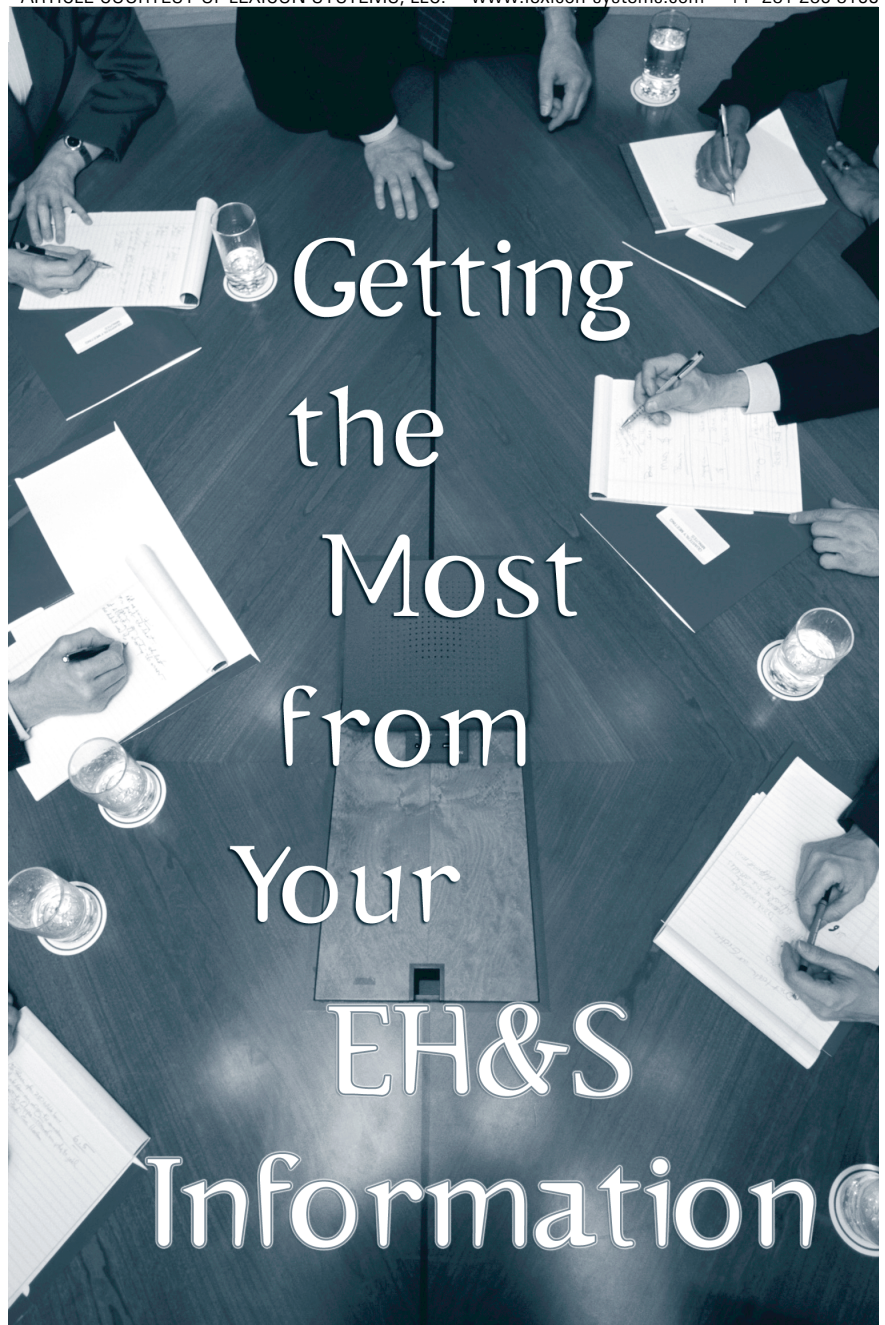
Why did we select the permitting strategy we used when we built the cogeneration plant in 1980? What about the Title V permits for our plant—what was the rationale for submitting five permit applications instead of one application for the whole site? Who was that stack sampling contractor that gave us such good service a few years ago? What were our greenhouse gas emissions over the past five years? How much natural gas did our facilities consume? What was the total volume of waste produced? What was the net waste cost per site?

Insightful environment, health, and safety (EH&S) information has become one of a company's greatest assets. Answering questions like those listed above can be painful even if the knowledge resides within your organization. It often requires involving several people and querying several data sources, can take several hours or even days to research, and then necessitates combining the answers into something useful. What do you do if the information no longer resides in your organization, if the knowledge in your EH&S staff's heads literally walks out the door when someone retires or leaves the company? How do you manage EH&S knowledge? The term *knowledge management* has been used loosely for several years.

Is it just another fad—or worse, just the latest buzzword? This month's column looks at knowledge management and the technologies that can help turn your EH&S data into information.

KNOWLEDGE MANAGEMENT

Today more than ever, we have data overload. According to Information Builders, a supplier of technologies that help organizations manage information (www.informationbuilders.com), "Most organizations use less than 10% of all the data they collect and provide less than 5% of the people with access to it." If you think about it, you have a lot of data rattling around in your head, your office, and your organization at any instant. I would wager that much of the "data" are not useful—they simply exist. So, how do you turn this amorphous



heap of data into useful information or business intelligence?

Experts differ when it comes to a universal definition of knowledge management, or what constitutes knowledge. The IBM Institute for Business Value says that knowledge management is the ability of an organization to create, share, and use the collective knowledge of its products, processes, and people to increase workplace productivity and reduce activities that "reinvent the wheel" (see "Challenges in Managing Organizational Knowledge," by M. Fontaine and E. Lesser, IBM Institute for Business Value, 2002; www1.ibm.com/services/insights/ibv_knowledgemanagementchallenge.html). An article in *CIO Magazine* (see "The ABCs of Knowledge Management," by M. Santosous and J. Surmacz, May 23, 2001; www.cio.com/research/knowledge/edit/knowledgemanagementabcs.html) lays out the basics of knowledge management: In the broadest

context, it says, knowledge management is the process through which organizations generate value from their intellectual and knowledge-based assets. Most often, generating value from such assets involves sharing ideas among employees, departments, and even with other companies in an effort to devise best practices. This collaboration connects people to people instead of people to information.

Neither of these definitions of knowledge management mentions technology. While information technology (IT) often supports knowledge management, remember that knowledge management is an ongoing process, not a technology in and of itself.

KNOWLEDGE-BASED ASSETS

IBM recognizes that knowledge management is being moved to the forefront of many corporate agendas. As firms seek to

build competitive advantage in increasingly competitive markets, they are turning to a previously untapped resource: their employees' knowledge, or knowledge-based assets. Knowledge-based assets in the environmental industry are as important as knowledge-based assets in other business areas. Organizations must establish what EH&S information qualifies as intellectual- and knowledge-based assets; it is not the same for all companies and organizations. Generally speaking, intellectual- and knowledge-based assets fall into one of two categories: explicit or tacit. *Explicit* knowledge consists of anything that can be documented, archived, and codified, often with the help of IT. *Tacit* (implicit) knowledge is the knowledge, experience, and expertise contained in people's heads. The major obstacle for most organizations is discovering how to recognize, generate, share, and manage that knowledge.

Knowledge-Based Buzzwords

Asynchronous Interaction

Online discussions occurring independent of time or location. Examples of asynchronous interaction are Web-based bulletin boards and e-mail.

Bulletin Board

A name for Web-based online conferencing spaces. Bulletin boards are asynchronous tools and can be organized in linear or threaded formats.

Chat

Same time (synchronous) Web-based text interaction. Typically fast moving, chat can be used for large "auditorium" events, smaller group work meetings, social interactions, or small one-on-one sessions. Some chat applications integrate voice as well as text.

Chief Knowledge Officer

The person responsible for organizing a company's knowledge and information and ensuring that the appropriate people have access to it.

Communities of Practice (CoPs)

Groups that emerge around a discipline or problem, for example, a work-related subject like PM₁₀ or bioremediation. They have no agenda; the subject that engages them defines them.

Content Management Systems

Software suites designed to incorporate tools and processes for document management.

Data Mart

A repository of data that serves a particular community of knowledge workers. The data may come from an enterprise-wide database or a data warehouse.

Data Mining

The process of data selection, exploration, and building models using vast data stores to uncover previously unknown patterns.

Data Warehouse

A database that stores large amounts of historical business data.

Document Management

The computerized management of electronic and paper-based documents. Systems generally include an optical scanner and a system to convert paper documents into an electronic form, a database to organize documents, and a search mechanism to quickly find specific documents.

F2F

Shorthand for "face-to-face," meaning offline interaction.

Intellectual Capital

The knowledge assets that a company owns, including information in company databases, as well as individual employees' knowledge.

Knowledge Management

- (a) Embodies organizational processes that seek the synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings.
- (b) The practice of researching, collecting, and organizing an enterprise's employees' knowledge.

Portal

Software that presents customized information and transactions to end users through a Web browser. Unlike an Intranet or Extranet, which only help companies distribute information on the Web, a portal also lets users run applications.

Virtual Community

A virtual community (also called online community) is a community of people sharing common interests, ideas, and feelings over the Internet or other collaborative networks.

Source: Glossary of Online Interaction, available at www.fullcirc.com/community/interactionterms.htm.

WHAT ARE THE BENEFITS OF SHARING KNOWLEDGE?

In the Information Age, a company's intellectual assets—what's in people's heads—are often more valuable than its physical assets—plants, office buildings, and equipment. This information must be shared to yield the greatest benefits of this knowledge. However, experts admit that collaboration alone, without good business reasons, can be meaningless at best and harmful at worst. A company considering deploying an EH&S knowledge management system should establish goals and expectations. Some benefits are self-evident and can be measured in bottom-line savings, but others are more difficult to measure, such as

- live, direct access to real-time information;
- access to information from multiple platforms and data sources;
- access to an unlimited number of users;
- improved relationships with key stakeholders, including the community, shareholders, employees, and regulatory authorities;
- more time to spend on forward-looking EH&S strategies;
- shortened timeline to make better EH&S decisions because of availability of information; and
- expertise and experience shared through collaboration capabilities.

TECHNOLOGIES TO SUPPORT KNOWLEDGE MANAGEMENT

Any number of software and hardware tools can support knowledge management, ranging from standard e-mail applications to complex databases and data warehouses to collaboration tools for online communities. The list below identifies some general categories of tools and technologies. Certain tools and technologies may fall into more than one category.

Knowledge repositories — Hardware includes data warehouses, data marts, and servers. Software includes a variety of EH&S management information systems; document management systems like Xerox and Documentum; repositories of geographic information systems (GIS) data like those provided by TetraTech; and historical risk information like the Environmental Data Resources Inc. database.

Expertise access tools — User interfaces that allow users to access databases with expert resumes, or audio/video/chat hardware and software that support live online forums or on-demand data access.

E-learning applications — Software tools that help to manage

the entire training life cycle, from curriculum development and training materials development to deployment and delivery through identification and documentation of who needs training and/or who received which training on what dates (see also “Hop Aboard the e-Train” *EM* December 2001, p 12).

Discussion and chat technologies — Software and hardware that support e-mail systems such as Microsoft Outlook, IBM Lotus Notes, and Eudora; collaborative software like IBM Lotus Sametime and IBM Lotus Quickplace; Internet-based conferencing tools like Placeware, WebEx, and Centra that allow distributed groups to “meet” together online at the same time; instant messaging software like Microsoft Instant Messenger and AOL Instant Messenger; and electronic bulletin boards and discussion groups.

Synchronous interaction tools — Hardware and software often used for online teaching, as well as interactive meetings. Synchronous interaction (also called “chatting”) requires that all participants be online at the same time and can include audio and video. All of the chat technologies mentioned above support synchronous interaction, except e-mail. Examples of software that can be used to illustrate various types

of information during synchronous interaction include Quicktime movie “stories” and other animation tools such as Macromedia Flash and Shockwave, in addition to Microsoft PowerPoint and other presentation software.

Search and data mining tools — Examples of search engines are Google, Yahoo!, Lycos, and MSN Search; examples of data mining tools are those provided by Cognos, IDC, Information Builders, KnowledgeSystems, and SAS.

Portals — Typically, Internet or Intranet-based user interfaces to a host of applications and data sources that may be housed in different systems. Good examples are regulatory agency Web pages (e.g., U.S. Environmental Protection Agency, www.epa.gov, and Environment Canada’s Green Lane, www.ec.gc.ca/envhome.html). A number of companies have public EH&S Web pages on the Internet and private EH&S Web pages on their Intranets. Various EH&S software firms offer portals that connect users to EH&S and other information (e.g., Ecos Technologies, www.ecostech.com; Enviance, www.enviance.com; ESP, www.esp-net.com; ESS, www.environ.com; and InteGreyted Consultants, www.integreyted.com).

Knowledge management systems can assist your organization in gaining competitive advantage by making EH&S information available to a larger community. If you are considering a knowledge management system, be sure to align all knowledge management efforts with your organization’s strategic objectives, and do not let the knowledge management system become an entity unto itself. Remember to address knowledge content, and understand how to tie knowledge management into an individual’s work activities. To borrow from Albert Einstein, “Everything should be made as simple as possible, but not one bit simpler.” ☺

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