FOCUS ON MANUFACTURING

Helping Tennessee companies achieve a sustainable competitive advantage — Fall 1999

Does your company need a formal environmental management system?

Six Tennessee companies team up to consider ISO 14001

Taking the lead at Federal-Mogul

Lots of folks can speak theoretically about the costs vs. the benefits of ISO 14001, but Jeff Moore knows the subject firsthand. Moore is the manager of facilities engineering at Federal-Mogul Corporation in Sparta, one of the first companies in Tennessee to register its environmental management system to the international environmental standard. In December 1998, Federal-Mogul became just the ninth plant in Tennessee to be registered to ISO 14001 and the first in the Saturn + 5 study group.

In a state where a fair number of company managers have never even heard of ISO 14001, what inspired this small-town plant, maker of headlamps and dashboard lights, to be among the first to go after registration?

Plant manager Terry Clemmons, facilities engineering manager Jeff Moore, and quality manager Tom Flight enter Federal-Mogul's hazardous waste accumulation area.

The easy answer, said Moore, is that management required it. Within months after the standard was approved in 1996, Cooper Automotive announced its goal to have all of its plants registered to ISO 14001 within five years. (Federal-Mogul reaffirmed this goal when it acquired Cooper Automotive in October 1998.)

A second reason was that ISO 14001 would be an appropriate next step for an environmental program that was already highly regarded, not only by the automotive community but by the more immediate community of Sparta. "We had always been one of the better companies in

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As executive vice president of North American Royalties Inc., parent company of Wheland Foundry in Chattanooga, Lorie Mallchok would rather do almost anything than worry about environmental problems.

Still, as heir apparent to one of the largest automotive castings empires in North America, Mallchok knows this much about environmental issues: if you don't manage them, they most assuredly will manage you. That's why, since she joined the family firm seven years ago, Mallchok has vigorously supported Wheland's efforts to craft a top environmental management system, or EMS. It's also why, in 1997, she urged the foundry to join five other Tennessee manufacturers in an unusual EMS study group known as *Saturn + 5: The ISO 14000 Pilot Project*.

Saturn launches a new model

Two years ago, there were fewer than a dozen Tennessee firms registered to ISO 14001.

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INSIDE:

- What is ISO 14001?
- Two companies' experience with ISO 14000 registration
- Lessons learned: Highlights of the Saturn + five ISO 14000 project

Produced by T·M·E·P
The Tennessee Manufacturing Extension Program
A service of The University of Tennessee Center for Industrial Services and the Tennessee Department of Economic and Community Development

TENNESSEE Sounds good to me

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That's partly what inspired the ISO 14000 Pilot Project.

In early 1997, Commissioner Milton Hamilton of the Tennessee Department of Environment and Conservation (TDEC) proposed an ISO 14000 discussion group to thoroughly understand the issues involved in implementing an EMS. Hamilton saw this as a possible tool to help Tennessee's industries build stronger environmental management programs. David Harbin, an EPA lawyer on assignment to TDEC, and Melanie Catania, an analyst in TDEC's Policy Office, were two of its organizers.

Lorie Mallchok encourages Wheland Foundry's preemptive attention to environmental issues because "they're a distraction. They slow you down. If you're spending a lot of time and energy putting out fires, you're not focusing on business."

"The Commissioner was very interested in ISO 14000 and what it could mean to Tennessee's industries," said Harbin. "He wanted to include not just TDEC and industry but also universities and private consultants, because they were already very involved in ISO 14000. We knew we had to be able to explain the pros and cons of the standard to our industries. So we set out to learn."

Bill Miller, then the environmental affairs manager at Saturn in Spring Hill (now General Motors' manager of regulatory and legislative initiatives) attended those first meetings. It occurred to him that a hands-on demonstration of ISO 14001 might be more instructive than a strictly theoretical debate about its benefits and costs. Saturn was just then considering registration, not only for itself but possibly as a future requirement for its suppliers. Perhaps this demonstration could be a sort of extended documentary, with trained observers following Saturn and two or three of its Tennessee suppliers as they worked their way through the registration

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For a complete copy of the ISO 14001 standard ("Environmental management systems—Specification with guidance for use"), contact:

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Website: www.global.ihs.com

ISO 14001: A Branch of the Family Tree

Many people refer to ISO 14000 and ISO 14001 interchangeably, but that's a little misleading. ISO 14000 refers to the large *family* of standards for environmental management, while ISO 14001 (the first-born standard in the series, published in 1996) contains the EMS specification itself.

ISO 14001 is one of the thousands of uniform standards, specifying everything from film speed to paper thickness, developed by ISO, the International Organization for Standardization. Founded in 1947 and based in Geneva, ISO is a worldwide federation of national standards bodies from 130 countries. (The United States is represented by ANSI, the American National Standards Institute.) Though often assumed to be an acronym for the International Organization for Standardization, ISO isn't short for anything. Rather, it's a play on *isos*, the Greek word for "equal." Apparently ISO's founders wanted a name that, like its standards, would not change from country to country.

Though ISO 14000 continues to evolve, it currently contains 21 standards covering everything from environmental auditing to labeling to vocabulary. As the central standard in the series, ISO 14001 contains the 17-item checklist against which every applicant for registration is judged. Briefly, an ISO-registered environmental management system (EMS) must contain:

- ☐ a statement of environmental policy
- ☐ procedures to identify and consider environmental aspects
- ☐ procedures to identify and gain access to legal and other requirements
- ☐ environmental objectives and targets
- ☐ environmental management programs for achieving the objectives and targets
- ☐ defined structure and responsibility
- ☐ procedures for ensuring employee training, awareness and competence
- ☐ procedures for internal (and possibly external) communication
- ☐ description of and directions to all EMS documentation
- ☐ procedures for document control
- ☐ procedures and criteria for operational control
- ☐ procedures for emergency preparedness and response
- ☐ documented procedures for monitoring and measurement
- ☐ procedures for corrective and preventive actions
- ☐ procedures for identifying, maintaining and disposing of environmental records
- ☐ programs and procedures for periodic EMS audits
- ☐ provision for regular management reviews of the EMS

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process. The results could then be compiled, assessed, and shared with companies everywhere. Never one to let the grass grow under his feet, by September Miller had pitched the idea to all 31 Saturn suppliers around the state.

"There are currently only three companies in Tennessee that are ISO 14001 registered," Miller said in a letter, "and only thirty nationwide. This trend, similar to ISO 9000, will accelerate in the next few years. There will be some that will lead, some that will follow, and some that will wait and see. …"

However, he cautioned in bold print, "[a]ll of the information we have from GM suggests that … ISO 14000 will become an informal trade barrier to companies wishing to sell goods and services in Europe and Japan. In other words, being ISO [14001] registered will be the price of admission to these and other markets."

Miller had been hoping to hook at least two fish with this last line. By the time he reeled it in, he had caught five.

The Saturn five (plus one)

The five volunteers made for an interesting group. At one extreme was ACD Tridon (now Trico Products), a 350-employee plant in Lawrenceburg that makes windshield wipers. At the other was Bridgestone/Firestone in Nashville, corporate headquarters to 45,000 employees, 17 tire plants and 20 other manufacturing facilities in eight countries. In between were Wagner Lighting (now Federal-Mogul Corporation) in Sparta, maker of headlamps and other automotive lighting, with 500 employees; Calsonic Yorozu Corporation in Morrison, maker of suspensions, with 750 employees; and Wheland Foundry in Chattanooga with 1,800 workers. Plus, of course, Saturn itself, with 8,000 employees at its Spring Hill plant alone.

Each of the six had effective environmental programs already in place; in fact, Bridgestone/Firestone had committed to get ISO 14001 registration at all of its major plants (including two in Tennessee) by the end of 1999. As for Federal-Mogul Sparta, it was already months into its quest for the 14001 certificate. (All three facilities have since been registered.)

The other four, however, including Saturn itself, were undecided about pursuing ISO 14001. But after all, that was the point of the pilot project, said Saturn senior environmental project engineer Lisa Caron: to provide answers to some of these questions.

"When we initially met (in January 1998), it was sort of difficult just getting ourselves aligned. What are our goals? What are our roles? We found out, going through the process, that we had to begin with a common understanding of what ISO 14000 is."

UT's Tennessee Manufacturing Extension Program offered to help take care of that last issue. As one of the two academic partners in the pilot project (Vanderbilt was the other), TMEP staff gave a half-day workshop to the group in February 1998.

Let's just do something!

Apparently this overview resolved a lot of questions, because when the team next came together, at Bridgestone/Firestone in March, members were itching to move forward. "We don't need to study this to death," said one member. "Let's just *do* something!"

Bill Miller agrees. "The end point of the whole exercise was to come up with some kind of communication tool, a list of lessons learned, that other companies could find useful when considering 14001: How much does it cost? How long will it take? Will it mean more permits? How do you get management involved?"

In August 1998 the group contracted with Bridgestone/Firestone fellow David Case, a lawyer and a doctoral candidate at Vanderbilt, to bring these questions into focus. With plenty of input from the group, Case compiled a lengthy questionnaire ranging from "how big is your company?" to "why or why not would you prefer to integrate your EMS with your quality management system?"

Case then spent the next eight months traveling to the plants, conducting the interviews, and compiling the responses into two final reports: a 64-page transcript (lightly edited) of all six interviews, and a 14-page summary (lightly analyzed) of the results.

In conclusion

With publication of this newsletter, the Saturn + Five ISO 14000 Pilot Project officially concludes. Two of the six participants have already gained

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These companies and individuals participated in the Saturn +5 ISO 14000 Pilot Project. Please feel free to contact them for more information about their environmental management systems.

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(*now Trico Products*)
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Safery & environmental facilitator
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BRIDGESTONE Firestone
Jim Vines
General counsel, environmental
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CALSONIC YOROZU CORPORATION
Stan Taylor
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FEDERAL MOGUL
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WHELAND FOUNDRY
Larry Bowers
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Federal-Mogul, continued from page 1

environmental management," said Moore, with an excellent track record in such areas as solid waste recycling, air emissions control and hazardous waste reduction.

Federal-Mogul would maintain this focus even without formal registration, said Moore, if for no other reason than that it saves money and reduces regulatory hassles. But one of the best things about adherering to ISO 14001 is that it forces a good EMS to become even better. "They tell you up front: your first audit's going to be easy. But the next year it'll be tougher, and the next year after that, because every time [the registrar] will be looking for evidence of continuous improvement."

There was yet another, more pressing reason for gaining ISO 14001 registration. Though Federal-Mogul Sparta may indeed be a relatively small facility (500 employees) in a very small town, its marketplace is huge. In order to serve such world-class customers as Ford, Denso, Chrysler, General Motors and Saturn, the Sparta plant must do a significant share of business overseas, where ISO 14001 is firmly entrenched. It hasn't happened yet, said Moore, but "we can see the day coming" when the plant's major customers require ISO 14001 registration as a condition of doing business, just as they now require ISO/QS 9000 registration for quality.

Okay: those are the benefits. What about the costs? Moore estimates the actual dollar expense at a little less than $12,000 for the registrar and $4,000 for employee training. But the biggest expense was internal labor, which, conservatively estimated, probably exceeded $25,000. "The actual process required a lot of extra work," he admits. "Usually my work is split up 40 percent environmental and 60 percent plant engineering. During [the registration process], it was more like 70 or 80 percent environmental, and 20 to 30 percent everything else."

For Moore, the biggest challenge of ISO 14001 was preparing all the required documentation. ISO 14001 operates largely upon a series of policies and procedures for everything from recordkeeping protocols to what to do in an emergency. Though there are templates and software programs available to the novice, Moore said that few companies—or at any rate, not his—can make much use of their "canned routines." Though the Sparta plant had a handful of formal, written procedures already in place, most procedures had either to be put into writing or created from scratch. Even with the help of a part-time typist, Moore spent hundreds of hours at his computer, drafting procedures, setting up databases, even creating programs that would enable the plant to combine ISO 14001 with its existing protocols for QS 9000.

But now that it's all behind him, Moore can say that "the value of registration outweighs the costs." The plant continues to find new ways to save money, he said; the positive press has been good for its public image; and the integrated system for QS 9000/ISO 14001 makes it easier to train employees, monitor impacts and measure results. And though they took a dog's age to produce, the new procedures come in handy. A few months ago, reports Moore, the state sent one of its field people out for an unannounced inspection. "I wasn't here that day," he said. "But the EMS identified my back-up, and it worked out real well."

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registration; another two are well along in the process; and a fifth is leaning strongly in that direction. Only one member, Wheland Foundry, does not intend to apply for registration, at least for now. As Wheland's Mallchok explained, "We think it's critically important to have a strong environmental management system, and Wheland's is already considered the best in the industry. But any registration process needs to be carefully analyzed based on the value it brings to a business. Right now, we see no practical advantage to becoming formally registered to ISO 14001. But if at some point in the future, that's what our industry or our customers require, we want to be well-positioned to get it."

And that's enough for the rest of the team. ■

Lessons learned, continued from page 7

opportunity to describe what types of changes they might make if they could "wave a magic wand" over how their firms were operated. The responses to these questions reveal some degree of dissatisfaction with certain aspects of current environmental management systems. Perhaps more importantly, however, they also reveal hopes for how undergoing the ISO 14000 certification process may provide improvements in such areas of concern.

A common "perfect world" refrain among member organizations was a desire to eliminate artificial time constraints for handling environmental issues caused by failure to incorporate environmental concerns or thought-processes early in the decision-making process. ACD Tridon, Bridgestone/Firestone and Wheland Foundry each specifically mentioned this issue. This complaint is, of course, related to the universal desire among the pilot group members for greater integration of environmental management into core firm business planning and decision-making. ■

For complete copies of the two Saturn +5 Project summary reports, visit the UT Center for Inustrial Services website at www.cis.utk.edu.

If you would like more information or assistance developing your own environmental management system, just call the TMEP at (615) 532-8657 or toll free at (888) 763-7439.

SATURN +5 Pilot PROJECT: Two companies' experience with ISO 14000 registration

Issue	Company A	Company B
No. of employees	850	500
No. of environmental personnel	1 env. eng., 1 env. tech.	1 env. eng., 1 env. tech.
Waste classification	Small quantity generator	Small quantity generator
How long to complete ISO 14001 (months)	6	10
Registrar costs	$24,000	$11,400
Consultants used?	Yes, at corporate level	Yes, for gap analysis and training
Reason for pursuing ISO 14000 registration	Corporate directive	Corporate directive
Other ISO registrations	ISO 9000, QS 9000	ISO 9000, QS 9000
Suggestion on sequencing 9000 and 14000	Do QS 9000 first	Do simultaneously if possible
Significant environmental aspects	Energy use, chemical mgmt., pollution prevention, air emissions, wastewater, spills, grounds	Hazardous waste, energy use, air emissions
How were significant aspects identified?	Matrix with weighting, policy, best professional judgment, neighbors, legal requirements	Severity, probability of occurrence, controllability
Level of env. staff effort (hours)	1,000	4,000
No. on implementation team	12	12
Time spent by implementation team	5% for 6 months	80 hours/person
Number of internal ISO 14000 auditors	30	4
Most time-consuming task	Documentation	Documentation
Task most underestimated	None	Document control, identifying environmental aspects
Training hours per employee	1	30 min. for all, 1 hr. for persons involved in significant environmental aspects
Perceived primary advantage	Integration of environmental practices with regular business practices	Increased environmental awareness, [lower] costs
What additional benefits should you receive for being registered?	More business, regulatory flexibility, better regulatory relations, enforcement avoidance	More business, be viewed as environmental leader, better regulatory relations, enforcement discretion

Focus on Manufacturing is pleased to present this special single-subject issue to help spread the knowledge gained from the Saturn + 5 ISO 14000 project.

Although ISO 14000 registration isn't for everyone, a good environmental management system can have a significant positive impact on any company's operations. If you would like more information about environmental management systems and how such a system could benefit your company, please call the TMEP at (615) 532-8657 or toll-free at (888) 763-7439. We'll send someone right over.

Wheland Foundry proves the power of a good EMS

EDITOR'S NOTE:

Following completion of this newsletter, Wheland and other suppliers were notified by Ford Motor Company that they will have to become ISO 14000 registered. Because of its headstart developing an EMS, Wheland is well positioned to meet Ford's deadline.

As director of environmental health and safety at Wheland Foundry, Larry Bowers has overseen development and implementation of a comprehensive environmental management system that has numerous advantages for the company.

At Wheland Foundry in Chattanooga, environmental issues are a major concern. The foundry, which makes auto parts such as brake drums, rotors and suspension components, is a large quantity hazardous waste generator, producing 6,000 to 10,000 tons of hazardous waste a year. It also generates about 200,000 tons of non-hazardous waste and releases more than 100 tons per year in air emissions.

The iron casting industry is not traditionally among those on the leading edge of environmental excellence. In fact, it's usually at the bottom of any list. The owners of Wheland Foundry, however, determined that Wheland would be a good neighbor to the residents of Chattanooga, and having good environmental policies is critical to that goal.

That's why Wheland's environmental management system (EMS) is so important to its day-to-day operations. But its EMS has done more for the company than just assure regulatory compliance and the appreciation of the city fathers. It's also provided the company with some significant competitive advantages.

"We have a more organized, advanced and proactive environmental program than any of our competitors," said environmental director Larry Bowers. Because of this, he added, Wheland's environmental costs are significantly lower than the industry average.

One of the principal benefits of an EMS, said Bowers, is that it lets management focus on making castings rather than fighting environmental brushfires. It also establishes a network of communication and responsibility, allowing key information and important decision making to be spread among several staff members rather than concentrated in a single person. "I think the company was too dependent on me personally," said Bowers. "I got phone calls constantly, even when I was on vacation, because we didn't have a good *system*."

The EMS also allows management to respond to new environmental issues quickly and efficiently. For instance, when Wheland built a new plant in Chattanooga it got the necessary environmental permits in just 90 days. "That's almost unheard of," said Bowers.

Of course, every company has environmental policies. But what prompted Wheland to develop a formal EMS?

"We started the EMS because we wanted to formalize our environmental compliance efforts," said Bowers. "At the same time, we knew the ISO 14001 standard was coming. In developing our EMS, we focused on what we thought the standard would require so we would be in line with it in the event we decide to become registered."

A gap analysis conducted in early 1998 showed the company was already about 65 percent compliant with the ISO 14001 standard. Plans are to be at least 95 percent compliant by April 2000.

But the question remains: *will* Wheland seek ISO 14001 registration?

For now, the answer is no. Like many companies, unless there is a compelling reason to do so (such as a customer requirement), Wheland intends to meet and maintain the requirements of ISO 14001 without actually registering to the standard itself. After all, ISO 14000 is a voluntary set of guidelines whose ultimate aim is to improve environmental performance according to uniform measures. If Wheland's EMS serves this same purpose, the system may not even need the ISO imprimatur.

So what advice does Bowers have for other companies considering a formal environmental management system? "Don't make it more complicated than you have to," he said frankly. "A small company, or one with limited environmental concerns, can have a very simple EMS … maybe just one page." The point is to have a system that works for the company. And if it works for the company, it will work for the environment.

Lessons learned, continued from back cover

if the work is done in-house, using existing staff, the only significant out-of-pocket expense is the fee for the registrar. For the two registered companies in this study, the registrar costs averaged about $17,500. (This of course does not include the required annual follow-up audits.)

On the importance of management support and involvement …

Perhaps not surprisingly, companies with the most detailed and "formalized" EMS's also appear to have the strongest management support for ISO 14001. Both of the group members currently registered to ISO 14001 said the mandate for registration came directly from corporate headquarters. All members said that management support is absolutely crucial for gaining ISO 14001 (or any strong EMS, for that matter). "Without commitment from the top," said one member, "you might as well not even try for registration."

Participants suggested two factors that tend to strengthen that commitment. One is having upper-level managers who have held plant-wide environmental responsibilities. It also helps if the plant is owned or managed by people with roots in the local community or who at least recognize the importance of environmental issues to that community.

Questions about EMS

Bridgestone/Firestone describes its EMS as "at least a very adequate [system] that keeps its plants and facilities fully compliant" with environmental regulatory requirements. However, the company asserts that this formal EMS is lacking in its integration with overall core company management. Bridgestone/Firestone expresses its view that the process of obtaining ISO 14000 registration for each of its manufacturing facilities should help remedy this perceived lack of integration. (To date, four out of Bridgestone/Firestone's nearly 40 plants have obtained or been approved for ISO 14000 registration.)

Calsonic Yorozu also states that it has a formal EMS in place. It consists of a series of approximately 15 major written procedures implemented as part of the company's QS 9000 quality management system. However, environmental managers at Calsonic Yorozu believe that a critical question for the firm's evaluation during the pilot project is whether a "stand-alone" EMS such as that implemented through the ISO 14000 process would better serve the company's needs.

Wheland Foundry is also QS 9000 registered but has invested significant effort and resources in developing a separate written Environmental Policy and Procedures Notebook which contains its formal EMS. Of all the member organizations that have not yet obtained ISO 14000 registration, Wheland Foundry appears to have developed the most detailed and "formal" EMS.

Only two companies stated that they did not have in place a "formal" EMS. Although ACD Tridon is QS 9000 certified and has in place "certain written procedures for handling environmental issues," it does not consider this to be a "formal" EMS. This is due, in part, to the fact that there "is no single notebook or other compilation" of these written environmental procedures available. Saturn also states that it currently operates under what it considers an "informal" EMS, despite fully maintaining compliance with environmental laws and regulations and being more than 60 percent in compliance with ISO 14000 as demonstrated by its most recent gap analysis.

ISO 14000 concerns

Most member organizations expressed strong concerns about either the process of becoming ISO 14000 registered or obtaining the registration itself. Only ACD Tridon stated that it had no concerns about becoming registered, based upon its experience obtaining QS 9000 registration.

A major concern for Bridgestone/Firestone is the fact that ISO is already working on revising the ISO 14000 standards before most companies in the United States have had the opportunity to obtain registration. At present, little is known about how potential revisions may affect the current standards, including whether significant time and resources invested in meeting current standards might end up being wasted if such standards are eventually substantially changed.

"Perfect world" issues

Perhaps the most entertaining and informative of the questionnaire responses are in the "Perfect World" Issues section. Here, the environmental managers for each company were given the

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Focus On Manufacturing is published quarterly by the **Tennessee Manufacturing Extension Program (TMEP)**, Tennessee's industrial extension service. The TMEP is a joint program of The University of Tennessee Center for Industrial Services and the Tennessee Department of Economic and Community Development.

MANUFACTURING EXTENSION PARTNERSHIP™
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Special thanks to Marge Davis for contributing the material in this issue.

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Lessons learned: Highlights of the Saturn + Five ISO 14000 Pilot Project

These summaries are drawn from "exit interviews" with the six members (ACD Tridon, Bridgestone/Firestone, Calsonic Yorozu, Federal-Mogul, Saturn and Wheland Foundry) of the Saturn + Five Pilot Project. Most of this information was compiled by David W. Case, J.D., LL.M., currently the Bridgestone/Firestone Fellow in the Vanderbilt Center for Environmental Management Studies.

To view or download the complete texts of the interviews or the executive summary of the Saturn + Five ISO 14001 Pilot Project, go to the CIS website at www.cis.utk.edu. Click on Publications, and find the documents you'd like.

On the importance of a formal environmental management system …

All six of the participating firms place a high value on environmental management, in part because "it's the right thing to do" and in part to "stay out of environmental trouble." Four of the companies have what they consider a "formal" EMS, and two of these (Federal-Mogul in Sparta and Bridgestone/Firestone in LaVergne and Morrison) have been registered to ISO 14001. Only two firms say they do not yet have a formal EMS (defined by them as a single notebook or other central compilation of the plant's major environmental policies and procedures). However, both have some written procedures in place and expect to have a "formal" EMS eventually.

On the benefits of ISO 14001 registration…

Members cite numerous benefits, actual or perceived, from ISO 14001. For instance, they say, certification enhances a company's image as an environmental leader; it fosters regulatory compliance; and it raises environmental awareness, especially among executives who may never have had to think about such matters before.

Most members also believe that 14001 registration will eventually become a requirement for doing business with major automobile manufacturers, just as is now the case with ISO or QS 9001 for quality. Likewise, based on their experiences with ISO 9000, some firms expect to see their business increase as a result of ISO 14000 registration.

Several members noted that ISO 14001 also can lower costs, whether by promoting waste reduction, streamling operations or mandating continual improvement. One member said that even though his plant had doubled in size in the past five years, environmental spending had risen hardly at all.

Other benefits cited or expected include heightened customer satisfaction; increased ability to attract and retain top managers and environmental personnel; fewer or shorter delays in responding to environmental emergencies; and better management practices in general, resulting in better products and services.

On the costs of ISO 14001 …

Time, money and excessive paperwork were the most commonly cited costs of ISO 14001, even among companies that were not yet registered. One member reported that it took him six months to prepare the dozens of procedures, policies and other documentation required by the standard, and that didn't include the time spent conducting a gap anaylsis, preparing for audits, training every worker in the plant and even designing a customized computer program. (The computer program, fortunately, is optional.)

These companies have found that, on average, it takes 12-18 months to become certified. However,

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