The ROI of EHS:
Practical Strategies to Demonstrate the Business Value of Environmental, Health, and Safety Functions
SPECIAL REPORT

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Executive Summary

Slashing environmental, health, and safety (EHS) programs is often the first measure taken by an organization in cost-cutting mode. Beefing up EHS programs is sometimes the last operational action taken by an organization in growth mode. EHS professionals are also frequently frustrated with the lack of sustained management commitment to EHS programs. The benefits of an organization’s EHS functions and performance are often undervalued because of communication barriers between EHS professionals and executive management, and a lack of standard metrics for evaluating all aspects of EHS performance. This situation is improving with the advent of EHS-business value measuring techniques (metrics) and well-organized strategies for using them in a business setting.

EHS professionals can effectively measure the performance of their programs using the tools of business managers and the format and language of the organization’s financial analysts. The results can be integrated and displayed within an overall EHS business strategy and in a way that demonstrates an organization’s return on EHS investment (ROI).

Several increasingly popular strategies have emerged to help EHS professionals strengthen the links between EHS performance and business value, including EMS/ISO 14000, the balanced organizational scorecard, Six Sigma, and the Baldrige Performance Model. These and several other strategies are covered in this report.

The balanced organizational scorecard is graphically illustrated as an example. The balanced scorecard is a management system—as well as a measurement system—that enables organizations to clarify their vision and strategy and translate them into action. It allows the user to visually assess EHS program performance and convert that performance into business values and financial indicators. The scorecard is part of a larger EHS program development strategy within the Baldrige Performance Excellence Model, which is also described in detail as a sample strategy to promote EHS performance as a business value.

These metrics and strategies have already been effectively deployed by EHS professionals in corporate settings, and their effectiveness will increase as more professionals use and learn from them.

Introduction

This report will help EHS professionals enhance the value of their programs and performance in the eyes of executive management. As this report will show, the value of EHS functions in an organization’s overall performance is much greater than expressed in annual reports, and often the benefits of EHS are hidden or intangible. Until now, it has been very difficult to measure EHS performance in business terms.
The report describes the barriers between EHS performance and business value, identifies and links the key EHS functions and associated business values, surveys existing methods for enhancing the business value of EHS, and offers innovative and practical tools and techniques for selling EHS initiatives to management.

**Barriers Between EHS Performance And Business Value**

The U.S. Environmental Protection Agency (EPA), in a 2000 study titled “Green Dividends?—The Relationship Between Firms’ Environmental Performance and Financial Performance,” identified five primary barriers to an understanding of the relationship between a company’s environmental performance and financial performance. These barriers, explained in this section, also apply to workplace safety and health.

1. **Lack of standard terminology to describe EHS performance.** A common terminology to describe EHS management strategies, and technical skills to relate such strategies to financial performance, is lacking. If EHS performance cannot be precisely defined, it cannot be measured rigorously. If such performance is not defined with reference to the operational objectives of individual firms and specific industries, it will not be relevant to managers and investors. A comparison of the language and criteria used to show performance in different corporate environmental or safety reports underscores the lack of consensus on the definitions and metrics used to convey EHS-related financial results.

For example, Interface Inc’s 2003 Sustainability Report presents workplace safety performance by the number of injury incidents per 200,000 hours worked, and Johnson & Johnson’s 2003 Sustainability Report presents the corresponding incident rate as the number of incidents per 100 employees. In order to compare the safety records of these companies, further analysis is needed to ensure both companies calculated their incident rates using the same criteria.

The financial services industry has not identified what, if any, environmental performance information it wants. Financial analysts have indicated that only industry-specific information—comparisons within, not across, industries—would be useful for its purposes.

2. **No common language among financial and EHS professionals for describing EHS values.** An organization’s financial managers often do not have evidence that it is worth the time and effort to understand the business value of a company’s environmental strategies. Financial analysts have no industry-specific environmental analyses nor company-specific environmental data related to established drivers of corporate value. Financial analysts, company environmental managers, regulators, and environmental advocates have different professional vocabularies and perspectives for evaluating and describing the same conditions.
3. **Inadequate technical skills to understand how environmental strategies affect financial outcomes.** The lack of means to translate environmental issues into financial terms was the greatest single barrier to integrating information about environmental strategies into financial analysis (PricewaterhouseCoopers, 1999). One industry may consider such integration important, and another industry may not. The lack of uniformity in skill and information integrity across industries will limit the ability of financial analysts who work for companies to articulate the value of those companies’ environmental strategies. Within companies, few people are experienced with environmental and full-cost accounting, which enables managers to measure total environmental costs.

4. **Lack of market incentives for EHS-related value to a product.** There is currently no way to demonstrate an industry-recognized standard of EHS performance that increases a product’s value in the marketplace. The existing EHS regulatory system is generally focused on prescribing and enforcing environmental, safety, and health standards. It has not gained much success with market mechanisms that would provide economic incentives to improve environmental performance. Sulfur dioxide emissions trading in the utility and manufacturing industry has shown some success as a market incentive, but the trading model has not yet been proven in other industries.

5. **Fiduciary responsibility to disclose EHS information is discouraged.** The lack of uniformity in disclosure of environmental performance means that investors cannot compare performance among companies. Even if financial managers were willing and able to disclose the financial value of EHS strategies, they would have difficulty doing so. The Securities and Exchange Commission (SEC) rules have only recently required SEC registrants to disclose certain information concerning compliance or noncompliance with federal, state, and local environmental rules. For example, the material effects of complying or not complying with environmental requirements on capital expenditures, earnings, and competitive position must be reported (17 Code of Federal Regulations 229.101).

**Correlating EHS Performance and Business Values**

EHS professionals need to know how business managers measure EHS program performance, and have a clear understanding of the business values that apply to their organizations, before they can make an effective business case for their EHS initiatives. This section describes EHS functions as a business cost, lists the business values critical to the organization’s executives, and links the two.

**EHS  Functions as a Business Cost**

EHS functions cover a wide range of tasks within an organization. All are sometimes viewed as a cost (as opposed to an investment or benefit) from the business management perspective. Following are several EHS-related functions with their associated costs:
Energy efficiency measures—development and implementation
Cost: Staff time, equipment purchase and maintenance

Environmental permit compliance permit applications, renewals, monitoring, and reporting
Cost: Staff time, application and legal fees, monitoring costs

Pollution prevention (P2) programs
Cost: Staff time, consultant fees, equipment purchase

Recordkeeping—OSHA logs, training schedule and records, permit, remediation, and regulatory compliance records
Cost: Staff time, administrative supplies

Remediation
Cost: Staff time, consultant fees, equipment purchase or lease

Safety compliance
Cost: Staff time, equipment downtime, production delays

Safety committee administration
Cost: Staff time

Security measures—chemicals, equipment, personnel, and production processes
Cost: Staff time, equipment purchase, production delays

Studies, audits, and reports—environmental impact studies, environmental and safety audits, and job hazard analysis
Cost: Staff time, consultant fees

Training
Cost: Staff time, consultant fees, production delays (employee downtime), and equipment purchase

Waste reduction program—planning and implementation
Cost: Staff time, equipment purchasing and maintenance, consultant fees

Business Values

The following are core business values of an organization’s executives and investors:

- Profitability
- Reputation/Image/Brand
- Market Share
- Time to Market
- Shareholder Value
- Cost Containment
- Productivity
- Customer Service
- Compliance Risk
As discussed earlier, EHS strategies affect financial and other business outcomes. EHS professionals need to consciously identify the links between specific EHS functions and the core business values. The grids in Table 1 and Table 2 illustrate two complementary methods to make these connections. The connections may vary depending on a particular organization’s EHS activities and core business values. First, link the EHS functions to the corresponding business values (Table 1). Then, lay out a strategy for measuring the performance of EHS functions as business value outcomes (Table 2).

Once you have made the connections between EHS functions and your organization’s business values, and determined what measures of EHS performance to use in the business value context, you can display the results in a business format and present your case to the organization’s decision makers.
Please see Table 3 (page 16) for a sample balanced organizational scorecard in the context of an overall EHS business plan.
A number of business management strategies have been developed that can help enhance the business value of EHS functions and activities. Several are outlined in this section:

- Environmental Management System
- Occupational Health and Safety Management System 18000
- Global Reporting Initiative Guidelines
- Lean Manufacturing
- Quality Assurance
- Balanced Organizational Scorecard
- Six Sigma
- Baldrige Performance Excellence Model

**Environmental Management System (EMS)/International Organization for Standardization (ISO) 14000**

The principal EMS guidance standard used by federal and state agencies in the United States is the ISO 14000 series.

The ISO 14000 series is a collection of standards that apply to several different aspects of environmental management, auditing, and lifecycle assessments. The standards help an organization set its own goals and standards for internal compliance and performance. Progress is not measured against a regulatory requirement, another company, or industry index, unless the organization designs it to do so. Generally, environmental objectives and performance targets are geared toward pollution prevention and operational efficiency. The ISO 14000 standards are expressed in a company as a written EMS.

An EMS addresses the following core elements:

- Environmental Policy—Management must formulate a written environmental policy relevant to the nature, scale, and environmental impacts of the operation. It must include a commitment to continual improvement and pollution prevention.
- Planning—An organization must identify the environmental aspects of its activities, products, or services over which the facility can be expected to exert control. Then, the organization must determine which of these aspects have a significant impact and ensure that the organization’s objectives and targets include these impacts.
- Implementation and Operation—The standard requires the organization’s EMS to have a clear structure and chain of responsibility, and describe training needs, internal and external communications procedures, document control process, and written operating and emergency procedures.
Monitoring, Recordkeeping, and Corrective Action—An organization must maintain written procedures for monitoring and measuring the key characteristics of its operations and activities that can have a significant impact on the environment, a process for conducting nonconformance investigations, and recordkeeping.

Management Review—Top management is required to periodically review the EMS to ensure its continuing suitability, adequacy, and effectiveness. This review must be documented and must address the possible need for changes to the EMS, taking into consideration the audit results, changing circumstances, and the concept of continual improvement.

Performance Track. EPA's Performance Track is designed to recognize and encourage top environmental performers who go beyond compliance with regulatory requirements to attain levels of environmental performance through the implementation of an EMS. The Performance Track is available to facilities of all types, sizes, and complexity, public or private, manufacturing or service oriented. Several states participate in Performance Track.

Facilities seeking entry into the Performance Track program must have adopted and implemented an EMS, commit to improving their environmental performance, commit to public outreach and performance reporting, and have a record of sustained compliance with environmental requirements.

Occupational Health and Safety Management System (OHSAS) 18000

OHSAS 18000 is an international occupational health and safety management system specification. The OHSAS specification provides a framework for an organization to control its safety and health risks, improve its performance, and at the same time, comply with legislative and regulatory requirements. OHSAS 18000 is comprised of two parts—OHSAS 18001 and OHSAS 18002—and embraces a number of other publications. It is compatible with the ISO 9001 and ISO 14001 management systems standards. OHSAS 18001 is an audit/certification specification, not a legislative requirement or a guide to implementation.

To obtain compliance from a certifying agency, an organization must first establish on OHS policy that illustrates the company's vision and commitment to health and safety. Any potential hazards must be determined and identified, and their risks assessed and controlled on an on-going basis.

OHSAS 18000 tracks very closely with the ISO 14000 series.

Global Reporting Initiative (GRI) Guidelines

GRI is an independent institution whose mission is to develop and disseminate globally applicable Sustainability Reporting Guidelines. Their Guidelines are for voluntary use by organizations for reporting on the economic, environmental, and social dimensions of their activities, products, and services.

The GRI Guidelines are a framework for reporting on an organization's economic, environmental, and social performance. The Guidelines:
Present reporting principles and specific content to guide the preparation of organization-level sustainability reports;

Assist organizations in presenting a balanced and reasonable picture of their economic, environmental, and social performance;

Promote comparability of sustainability reports, while taking into account the practical considerations related to disclosing information across a diverse range of organizations, many with extensive and geographically dispersed operations;

Support benchmarking and assessment of sustainability performance with respect to codes, performance standards, and voluntary initiatives; and

Serve as an instrument to facilitate stakeholder engagement.

**Lean Manufacturing**

Lean Manufacturing is the systematic elimination of waste by focusing on production costs, product quality and delivery, and worker involvement. It represents a fundamental paradigm shift from the traditional “batch-and-queue” mass production to a “single-piece flow, pull production.” Implemented properly, a shift in demand can be accommodated immediately without the loss of inventory stockpiles associated with the traditional batch-and-queue manufacturing system.

**Quality Assurance/ISO 9000**

The ISO 9000 series of performance standards are concerned with improving an organization’s quality management. It focuses on the customer’s quality requirements and applicable regulatory requirements, while aiming to enhance customer satisfaction and achieve continual improvement of the organization’s performance in pursuit of these objectives. The “customer” is often another business.

**Balanced Organizational Scorecard**

*Note:* The discussion of the Balanced Scorecard and the Balanced Scorecard chart on page 16 derived from presentations by Peter Furst, Vincent Kranz, and Norka Saldaña. See the Background Literature section on page 35 for more information.

Good visual displays of data, information, trends, and strategies are essential for getting corporate managers to buy into new or enhanced company programs. An effective way to do it: Build a balanced organizational scorecard.

The balanced scorecard is a management system—as well as a measurement system—that enables organizations to clarify their vision and strategy and translate them into action. The balanced scorecard approach provides a clear prescription as to what companies should measure in order to “balance” the financial perspective. Some organizations use the term dashboard as an alternative to the scorecard. The dashboard should include a glossary of definitions (easy way to translate EHS terms into business values) for anyone viewing the dashboard.

An organizational scorecard is built into an overall management framework that takes five primary factors into account:
◆ Mission—a statement of why the organization exists
◆ Guiding principles—values that drive the organization toward its mission (profit, productivity, customer satisfaction, employee loyalty, and others)
◆ Vision—how to carry out the mission (factors that distinguish the organization)
◆ How the organization is doing—criteria for measuring progress
◆ Targets—desired performance and results

The scorecard graphically illustrates how the organization is doing measured against the desired targets. An example of the balanced organizational scorecard is provided in this report.

**Six Sigma**

Six Sigma is a methodology that identifies unacceptable variability in an operation, with a goal to eliminate operational defects. It is also a statistical measure of performance (3.4 defects per million operations or opportunities, or six standard deviations (sigmas) from an average). It is a measure of quality that strives for near perfection. The original goal of Six Sigma was to increase customer satisfaction through the reduction of product defects. It has evolved as a way to do business.

Six Sigma can be used to enhance the business value of EHS programs. For example, it can be used to measure a company’s progress toward reducing the lost workday rate (LWDR) from workplace injuries. Johnson & Johnson, a healthcare products company, used the Six Sigma metric to establish a companywide LWDR goal of 0.06 injuries per 100 employees. EHS managers needed to show corporate executives how they were going to meet that goal and justify the need for company resources (finances, authority, and commitment) to do it.

The basic elements of the Six Sigma strategy are:
◆ Define—Identify and define the EHS problem and business value affected
◆ Measure—Develop and implement method(s) of measurement (LWDR, for example)
◆ Analyze—Analyze the data collected and compare against goals/targets
◆ Improve—Identify and address the 20% of the drivers that will generate 80% of the outcomes
◆ Control—Recommend and implement measures to control and reduce operational defects

Repeat the process until the Six Sigma goal is achieved.

Johnson & Johnson’s Process Excellence staff combined the Six Sigma strategy with the balanced organizational scorecard. Through this process, they found that driving accidents had the greatest impact on LWDR, and developed strategies to prevent driving accidents.
Baldrige Performance Excellence Model

The Malcolm Baldrige Performance Excellence Model is a performance system that evaluates a company’s status and progress toward two goals:

- Delivering ever-improving value to customers
- Improving overall operational performance

The Malcolm Baldrige National Quality Award is given by the president of the United States to businesses and to education and healthcare organizations that apply and are judged to be outstanding in seven categories of business activity. Many businesses conduct self-assessments of their business operations using the Baldrige Model exclusive of the Award.

Seven Steps Toward Integrating EHS As a Business Value

As an EHS professional, how can you integrate EHS activities into your company’s business management system? The maxim to follow is: What gets measured gets results. Rather than bemoan the situation that the business end of your company does not understand EHS problems, learn bizspeak so that you can communicate EHS to upper management in their own language. And that means a system for measuring performance and results.

One system that is becoming increasingly popular is the Baldrige Performance Excellence Model. The Baldrige Model is a performance system in which seven criteria (categories) are assigned a set number of points. Data in each category are collected, analyzed, and tracked through scoring guidelines. Companies that are currently using the Baldrige system, or a version thereof, are holding their frontline managers accountable for their performance scores.

The seven categories in the Baldrige system are:

<table>
<thead>
<tr>
<th>Category</th>
<th>Point Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1: Leadership</td>
<td>120</td>
</tr>
<tr>
<td>Category 2: Strategic Planning</td>
<td>85</td>
</tr>
<tr>
<td>Category 3: Customer and Market Focus</td>
<td>85</td>
</tr>
<tr>
<td>Category 4: Measurement, Analysis, and Knowledge Management</td>
<td>90</td>
</tr>
<tr>
<td>Category 5: Human Resource Focus</td>
<td>85</td>
</tr>
<tr>
<td>Category 6: Process Management</td>
<td>85</td>
</tr>
<tr>
<td>Category 7: Business Results</td>
<td>450</td>
</tr>
</tbody>
</table>

**Total points** 1,000
The Baldrige criteria and scoring guidelines make up a two-part assessment system that provides a profile of strengths and opportunities for improvement relative to 19 performance-oriented requirements. An organization may assign different category point values to meet internal goals, as long as the total equals 1,000. The following steps outline a Baldrige-type approach EHS managers can use to document and present EHS value.

**Step 1: Leadership**

1. **Organizational Leadership**  

   Leadership should address how you guide your EHS department in setting values, directions, and performance expectations. By documenting your actions in the following areas, you will be able to show upper management a systematic approach to EHS value.

   **A.** How do you assess the impact of your products and operations? Examples include:
   - Performing life cycle analyses (LCA) to review product sustainability
   - Implementing an EMS that includes measurable goals and results
   - Conducting risk assessments

   **B.** How do you achieve/surpass regulatory compliance? Do you:
   - Systematically monitor federal and state EHS regulatory developments?
   - Systematically perform risk-based audits?
   - Effectively implement an EMS?

2. **Social Responsibility**  

   The negative perceptions of environmental risks and liability often scare corporate officers into trying to hide environmental issues. With the current emphasis on corporate responsibility and disclosure, that is becoming increasingly difficult. Leadership for an EHS manager also means proactive communication in fulfilling public responsibilities and documenting the efforts and results for upper management. While this will not necessarily translate into zero environmental mishaps, it will mitigate any environmental impact and help ensure that the surrounding community holds the company in a positive light. A proactive approach will translate into good public relations—a result that will only enhance EHS value with upper management. Be sure to document your activities in this area and include public comments and recognition about your activities. Do you:
   - Have a proactive risk communication policy? By building and integrating a proactive risk communication policy into your EHS activities, your community will know that it can work with you and rely on you in the event of a mishap. Be the first one to tell them about a problem. Outline the risks inherent in your product and/or processes, but also outline the economic value your company brings to the community.
   - Anticipate public concerns? This can be accomplished by being visible in your community. Attend local government meetings. Actively network with your local nongovernment organizations (NGOs). Support research and develop community outreach programs.
Actively support and strengthen your community? This can best be accomplished by a community work requirement that is built into each EHS employee’s performance review. Document your department’s involvement in community events such as cleanup days, recycling programs, emergency response, and outreach into schools.

**Step 2: Strategic Planning**

**2.1 Strategy Development**

Strategic planning emphasizes that improvement and learning need to be embedded in your work processes. It aligns your work processes with your EHS department’s strategic directions, thereby ensuring that improvement and learning will reinforce departmental priorities. The strategic development process helps you set directions, develop objectives, and sets in place the documentation of your department’s overall performance, competitiveness, and future success.

**A.** Outline your department’s strategic planning process through a formal, systematic EHS strategy process. Identify:

- Key strategic EHS objectives and most important goals for the objectives
- Key participants
- Key steps
- Short- and long-term planning horizons. Include how you set these horizons and how your strategic planning process addresses these time horizons.
- External and internal influences on your department

**B.** Include a specific focus on impacts on society and compliance (see Step 1).

**C.** Describe how you collect, analyze, and track data and information for strategic planning through a comprehensive EHS management system. Specifically address:

- Systematic (e.g., quarterly) analysis of trends in such areas as waste, energy, injury and illness, and noncompliance issues
- Your customer and market needs, expectations, and opportunities
- Your capabilities relative to competitors’
- Key technological and other innovations and changes that might affect your products/ processes and EHS operations
- Your strengths and weaknesses, including human and other resources
- Your opportunities to redirect resources to higher priorities
- Potential societal, ethical, and regulatory risks that could affect your EHS operations
- Changes in local, national, or global economy
- Factors unique to your EHS department, including partner and supply chain needs, strengths, and weaknesses
2.2 Strategy Deployment

Describe how you will convert EHS strategic objectives into action plans. Include:

A. Action plan development and deployment:
   - How do you develop and deploy action plans to achieve your key EHS strategic objectives?
   - How do you allocate resources to ensure accomplishment of your action plans?
   - How do you ensure that the changes resulting from action plans can be sustained?
   - What are your key short-term and long-term action plans? Are there any changes you will have to make in such things as products and services, customers and markets, and operations?
   - What are your key human resource plans that derive from your objectives and action plans?
   - What are your performance measures and indicators for tracking progress on your action plans?

B. Performance projection:
   - For your performance measures, what are your performance projections for both your short- and long-term planning time horizons?
   - How does your projected performance compare with competitors?
   - How does it compare with benchmarks, goals, and past performance?

Step 3: Customer and Market Focus

3.1 Customer and Market Knowledge

Your customer satisfaction and dissatisfaction results provide vital information for understanding your customers and the marketplace. It’s imperative to focus on delighting customers, building loyalty, and meeting customer requirements and expectations. Document how the EHS department works with the marketing department to target customers, customer groups, and market segments. Suggestions include:

- Ensure that there is an EHS representative involved in any company project aimed at customer acquisition and retention.
- Become an active member of your local, state, and/or national trade or business associations and encourage EHS department employees to follow suit.
- Attend conferences and trade shows in your industry sector.
- Use the Internet news services, listservs, and trade association sites to monitor EHS trends in your business or industry.
- Make sure other departments are aware of, and, if appropriate, involved in your efforts.
3.2 Customer Relationships and Satisfaction

- How can you as an EHS manager build relationships to acquire and retain customers? How can you determine customer satisfaction? Suggestions include proactively working with other departments to:
  - Target a feasible number (depending on the size of your organization) of your largest customers and meet with them on a quarterly basis.
  - Conduct customer satisfaction surveys.
  - Document formal and informal feedback from customers.
  - Implement a complaint management process to ensure that complaints are resolved effectively and promptly.
  - Implement a process to collect and analyze complaints for product and/or process improvements.

Step 4: Measurement, Analysis, and Knowledge Management

4.1 Measurement and Analysis of EHS Department Performance

How you measure and analyze your EHS department’s performance will be the driver for continuous improvement. However, central to the use of data and information are their quality and availability. You may find that there is a good amount of comparative safety data, but less environmental. Here is where you will need to determine what information you want to use and how you can efficiently find it.

Tips include:

- Research peer companies EHS departments
- Collect a list of internal available EHS data
- Use existing metrics
- Identify additional metrics for the purpose of establishing a baseline

Once you have identified the information you want to analyze and compare over time, develop measurable goals. Establish:

- Your baseline
- Interim targets
- Improvement over a manageable period, e.g., 5 years

4.1.1 Measure the value of EHS programs—develop internal metrics

Develop a metric system for determining the value of EHS programs, showing trends, and displaying the results of EHS goals in the context of overall business goals in a format that will be intuitively understood by company executives. Several methods are described in this report. This section describes how to build an effective metric system using the balanced organizational scorecard.

Table 3 is a sample balanced organizational scorecard.
## TABLE 3
Ouda-Compe Alliance Corp.
Sample Balanced Organizational Scorecard

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Indicator</th>
<th>Target</th>
<th>Base Year 2000</th>
<th>Exceeds Target</th>
<th>Meets Target</th>
<th>Marginal</th>
<th>Not Acceptable</th>
<th>Responsible Department (Lead/Assist)</th>
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</thead>
<tbody>
<tr>
<td>Lost work day rate (LWDR)</td>
<td>LWD/1,000 work hours</td>
<td>0.03</td>
<td>0.035</td>
<td>0.18</td>
<td></td>
<td></td>
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<td>EHS/EHS</td>
</tr>
<tr>
<td>Energy Use--Production kilowatt hours (kWh)/month Process</td>
<td>3,000</td>
<td>3,145</td>
<td>3,500</td>
<td></td>
<td></td>
<td></td>
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<td>EHS/EHS</td>
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<td>Environmental Initial/Refresher Training Sessions Completed</td>
<td>95/95</td>
<td>60/40</td>
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<td></td>
<td></td>
<td></td>
<td>EHS/HR</td>
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<tr>
<td>Safety Initial/Refresher Training Sessions Completed</td>
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<td>60/30</td>
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<td>EHS/HR</td>
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<td>Air, Water, Waste Incidents of Noncompliance</td>
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<td>7</td>
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<td>Operations/EHS</td>
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<td>Accident Investigation Time to Completion</td>
<td>Business days per investigation</td>
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<td>Accidental Releases-Water/Air</td>
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<td>Operations/EHS</td>
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<td>Environmental Violations and penalties</td>
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<td>EHS</td>
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<td>Operations/EHS</td>
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<td>Water Use--Production Process</td>
<td>Gallons per month</td>
<td>340,000</td>
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<td>400,200</td>
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<td>Hazardous Waste Generation Rate</td>
<td>Pounds per month</td>
<td>220</td>
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<td>Community Complaints</td>
<td>Complaints per month</td>
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<td>8</td>
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</tbody>
</table>

In 2001, hired a consultant to develop and implement training program, but the contract was terminated in 2002 for lack of funds.

In 2001, hired new Senior Safety Engineer with Safety Training Specialist (STS) certification. Implemented comprehensive training program.
TABLE 3—Explanation

The “Criteria” column describes the standard on which a judgment or decision will be made. The “indicator” column describes the measuring index for determining whether the criteria targets have been met. The “Target” column shows the indicator value that meets the organization’s objective or goal for the criteria. The Current Year and Base Year columns show the measured value of the criteria. The next four columns graphically show progress toward the target or goal for the criteria. The last column shows what administrative part of the company is responsible for managing the operation or activity related to each criteria.

Develop a glossary of terms with a more detailed description of the criteria and indicators to accompany the scorecard.

**4.1.2 Display EHS performance results in a business value format.** The financial value of many EHS functions can be derived from the Scorecard. For example, any reduction or increase in the lost workday rate may be graphically illustrated with descriptions of safety program activities over time to make the case for continued or increased funding.

Use visual displays in formats commonly used by managers, and tie in the company’s mission, vision, and business strategy.

**Figure 1** and **Figure 2** graphically show the results of the scorecard values for LWDR and safety training.

**Figure 1  Safety Training Investments Trend 2000-2004**

**Figure 2  LWDR Trend 2000-2004**
By using strong evidence and logically explaining how these results are linked, the EHS manager can make the case that increased funding for safety training programs resulted in a lower LWDR. Therefore, the business case can be made for sustaining or increasing funding for training programs because it will help contain overall operational costs. The manager must also consider other factors, such as new engineering controls, or alcohol/drug program enhancements, that may have contributed to the LWDR decrease. These factors should be documented as comments in the appropriate category within the scorecard, or as an attached comments document. The manager can go further by calculating the effect of LWDR on the company’s overall productivity rate.

Some EHS functions are not as readily converted into financial value. The value of employee training is more difficult to quantify in business terms. As discussed elsewhere in this report, the quantity of training sessions does not necessarily reflect improvement in employee behavior or efficiency. The Scorecard, however, makes it possible to compare trends in the values of activities that are traditionally related to training, such as illness/injury rates, LWDR, incidents of noncompliance, and accidental releases. The scorecard information yields better informed qualitative judgments about the value of training in relation to trends in other company operations.

4.2 Information and Knowledge Management

Data and information availability are of growing importance. Business managers are especially interested in comparative data such as that developed on a Balanced Scorecard (see 4.1). For your data to be most effective, they have to be reliable and readily available to upper management, employees, customers, and suppliers, as appropriate. Tips to manage your data include:

◆ Target the data you most want to capture and analyze (see 4.1 for examples). Too much data will make the effort too unwieldy. Don’t be inflexible, but be judicious in adding data down the line.

◆ Select hardware and software that is reliable, secure, and user friendly. Fancy programs are intriguing, but if they are too complicated and time-consuming you will lose motivation to use them.

◆ Develop a system wherein you set time aside on a scheduled basis to collect and input the data. This can be done programmatically depending on the sophistication of your company systems. Otherwise, you may be on your own until the value of your data is recognized on a companywide basis. Suggested sources include required company reporting such as lost workdays and employee feedback.

◆ Systematically review your data to ensure integrity, accuracy, and confidentiality where appropriate.

Tips to make your data available include:

◆ Present the data to upper management on a monthly basis. Don’t overwhelm with all the data. Make sure your presentation come to the point by presenting only the graphs of trends and meaningful comparisons. However, have the other support information available.
If your company has an intranet, post selected data on a monthly basis. If not, or in addition, post it on bulletin boards and areas where employees are sure to see it.

**Step 5: Human Resource Focus**

**5.1 Work Systems**

**A.** Establish goals that will ensure that EHS department employees achieve high performance. Part of this will involve “management by walking around.” Your management style should promote cooperation, empowerment, and innovation.

Goals should include:

- Organizing and managing work and jobs to have the ability to keep current with business needs.
- Capitalizing on diverse ideas, cultures, and thinking of employees and the communities from which your employees and customers come.
- Achieving effective communication and skill sharing across work units, jobs, and locations, if applicable.
- Collecting and managing employee feedback.
- Ensuring that your employee management system supports a customer and business focus.
- Ensure that your compensation, recognition, and incentive programs reinforce high performance work.

**B.** Implement practices that will help you achieve your goals. Best management practices include:

- Systematically identify the characteristics and skills needed by potential employees. Use these in your recruiting and hiring process.
- Make sure as much as possible that your employees represent the diverse cultures and thinking of your employee hiring community.

**5.2 Employee Learning and Motivation**

Effective employee education, training, and career development will help you achieve your overall goals and contribute to high performance. Best management practices include:

- Systematically identify skills that are necessary to attain your overall goals and demonstrate to upper management (see 4.1) how resources toward these goals will impact the bottom line.
- Systematically seek and use input from employees on education and training needs.
- Develop a system that institutes and tracks employee training in areas that are required for compliance reasons and in skills that are individual performance measures, performance improvements, and overall technological change.
- Make sure that you are aware of individual employee career and personal aspirations in order to assess how they align to your EHS management goals and steer training and education to coordinate them.
Use formal and informal assessment and delivery approaches, including regular performance appraisals, mentoring, daily contact, and training including approaches such as on-the-job, classroom, computer-based, distance learning, and outside educational experiences.

5.3 **Employee Well-Being and Satisfaction**  

Maintaining a work environment and an employee support climate that contributes to the well-being, satisfaction, and motivation of employees will further ensure that you meet your EHS goals. Factors that effect employees' well-being, satisfaction, and motivation include:

- Effective employee problem or grievance resolution
- Safety factors
- Employees' view of management
- Training, development, and career opportunities
- Employee preparation for changes in technology or work organization
- Work environment and conditions
- Employee sense of empowerment
- Information sharing by management
- Workload
- Cooperation and teamwork
- Recognition
- Services and benefits
- Job security
- Compensation
- Equal opportunity

Best management practices to ensure workplace well-being and satisfaction include:

- Develop performance measures and targets for key workplace factors such as health, safety, security, and ergonomics.
- Systematically assess ergonomic and other employee health and safety factors.
- Explore certification to a management system such as OHSAS 18001 and ISO 14001 to help control environmental and occupational risks and improve overall performance. If certification is out of the question, at least be familiar with the standards in order to perform risk assessments and develop a measurable EHS management program.
- Develop a preparedness plan for workplace emergencies and disasters.
- Promote counseling, career development, and employability services.
- Institute, where appropriate, job rotation and sharing.
- Allow, where feasible, flexible work hours and location (e.g., telecommuting).
Measures and indicators of employee well-being and satisfaction that should be reported in 7.4 include:

- Data on safety and absenteeism
- Overall turnover rate
- Employee charitable contributions and community involvement
- Grievances, strikes, and other job actions
- Insurance costs
- Workers’ compensation claims
- Results of employee surveys. Survey indicators of satisfaction include:
  - Employee knowledge of job roles
  - Employee knowledge of organization and direction
  - Employee perception of empowerment and information sharing

See Appendix B for a sample Employee Survey.

**Step 6: Process Management**

**6.1 Value Creation Processes**

This step focuses on value creation for all key stakeholders. The aim is to create value for your customers (both external and internal) and other key stakeholders and improve your operational performance and, by extension, the company bottom line. You begin the process by identifying your EHS department’s:

- Key product or service
- Key processes and their requirements
- Key business processes

Your key business processes are those nonproduct and nonservice processes that are considered most important to business growth and success by your upper management. They often relate to overall organizational strategic objectives. Key business processes might include processes for:

- Innovation
- Research and development
- Technology acquisition
- Information and knowledge management
- Supply chain management
- Supplier partnering
- Outsourcing
- Project management
- Global expansion
- Sales and marketing
In the next step, outline how these processes are:

- Designed
- Implemented
- Performed

Then, identify your key performance measures for control and improvement of your processes.

Include how in-process measures and customer and supplier feedback are used.

Key to process management is a commitment to quality and continuous improvement. To achieve better process performance, you might implement approaches such as:

- Lean Enterprise System
- Six Sigma methodology
- ISO 9000 standards
- P2

Use the checklist on the following pages to assess your product/processes to see if you are taking advantage of all your P2 opportunities.
Procurement

Do vendors generate waste when they manufacture your raw materials or provide services to your facility?  
Yes  No

Can you design your product so that it does not require hazardous chemicals for maintenance or disposal?  
Yes  No

Do chemical requesters give P2 a high priority in initiating chemical orders?  
Yes  No

Has the company calculated the amount of waste currently generated, including hazardous and solid wastes, water effluents, and air emissions?  
Yes  No

Has the company calculated all costs for waste management, including solid and hazardous wastes, wastewater, and air emissions? Include total costs, including liability, equipment, and labor, in addition to treatment and disposal costs.  
Yes  No

Has the company established a computer tracking system to allow access to chemical inventory information?  
Yes  No

Have chemical requesters predetermined the quantity and type of chemicals in placing chemical orders?  
Yes  No

In addition to cost, have requesters evaluated the chemical’s properties (e.g., shelf life, weather sensitivity) and its usefulness to the specific process?  
Yes  No

Have requesters consulted in-house engineers or other experts about the chemical?  
Yes  No

Have authorizing supervisors consulted chemical requesters about any changes that the supervisors have made in an order?  
Yes  No

Have both requesters and authorizers factored in waste management costs when considering different types of chemical orders?  
Yes  No

Are requesters, authorizers, and purchasing agents meeting periodically to discuss P2 in the procurement process?  
Yes  No

Have these workers included in-house engineers and management in this P2 “information loop”?  
Yes  No

In particular, have purchasing agents discussed with management the cost savings associated with P2 in the procurement process (i.e., the problem caused by giving initial chemical prices a high priority in relation to increased hazardous waste generation)?  
Yes  No

Have purchasing agents made sure to evaluate chemical inventory information in the computer tracking system when deciding on chemical quantities or types?  
Yes  No

Have purchasers considered combining orders from many departments (but not altering specific requests)?  
Yes  No

Have purchasers avoided supplier deals or bargains that may eventually leave them with hazardous waste?  
Yes  No

As much as possible, are companies purchasing chemicals in bulk or minibulk containers?  
Yes  No
## Storing Chemicals

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>Are chemical handlers, forklift operators, etc., adequately trained in spill prevention (are they knowledgeable about incompatible and/or reactive chemicals)?</td>
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<td>Are facilities designed to minimize the transportation of chemicals through areas where incompatible chemicals are stored?</td>
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<tr>
<td>Have generators avoided the adjacent storage of incompatible chemicals (especially involving chemicals that may react with acids that are stored near them)?</td>
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<tr>
<td>Are aisles and floors designed to easily accommodate the turning radius of forklifts?</td>
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<td>Have companies eliminated berms, ramps, and other uneven surfaces that may cause forklift accidents?</td>
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<tr>
<td>Have you asked for free P2 advice from state agencies, vendors, employees, customers, trade associations, and others in your industry?</td>
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## P2 Plan

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>Have you put together a P2 team to identify, track, and reduce waste? The team should establish goals based on benefits to the environment, profitability, liability reduction, and improved safety.</td>
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<tr>
<td>Have you obtained full commitment from top management, department managers, supervisors, line workers, and vendors? Develop a corporate environmental quality statement to start.</td>
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<td>Have you announced your successes, given or received praise, and involved everyone in the program?</td>
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<tr>
<td>Have you developed and implemented a written P2 plan establishing goals and responsibilities including the ranking of wastes (by risk to the environment, cost to the company, volume on-site, etc.)?</td>
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</table>
6.2 Support Processes

In this step, you will examine your EHS department’s key support processes with the goal of improving overall operational performance. First you will identify the key support processes that are considered most important for your department’s value creation processes, employees, and daily operations.

These might include:
- Finance and accounting
- Legal
- Human Resources
- Facilities management
- Administration

The next step is to determine how you can minimize costs in your department associated with inspections, tests, and audits through the use of prevention-based activities and processes. You will then outline the improvements you have made so that they can be shared throughout your organization.

Step 7: Business Results

In this step you provide real-time information (measures of progress) for evaluation and improvement for processes, products, and services as they relate to your overall departmental strategy.

7.1 Customer-Focused and Product and Service Results

Here is where you examine in real-time your department’s customer-focused performance results with the aim of demonstrating how you have been satisfying customers, and have developed loyalty (retention), repeat business, and positive referrals. Loyalty, repeat business, and longer-term customer relationships are indicators and measures of future success.

Customer satisfaction and dissatisfaction results reported here should relate to the determination methods and data you described in Step 3. Measures to consider are:
- Retention, gains, and losses of customer accounts
- Customer complaints and complaint management
- Customer-perceived value based on quality and price
- Customer assessment of access and ease of use, including courtesy in service interactions
- Awards and ratings from independent organizations (e.g., EPA Performance Track membership or Energy-Star partnerships, governor awards in P2, ISO certifications or recognition for equivalent environmental or safety management systems)
- Positive referrals
Use the information gathered in **Step 3** to determine your product and service performance that relate to measures and indicators that are important to your customer. Compare these results, where appropriate, with competitor performances.

### 7.2 Financial and Market Results

In this step you examine your EHS department’s financial and market results with the aim of understanding your challenges and opportunities. Here you will pull data in real time from **Step 4** to demonstrate current levels and trends in your key indicators of EHS business value, including aggregate measures of financial return, where appropriate.

### 7.3 Human Resource Results

In this step you summarize your EHS department’s key human resource results as they correlate with the goals you set out in **Step 5**. This will show how well your department has been creating and maintaining a positive, productive, learning, and caring work environment.

Results measures reported for work system performance might include improvement in:

- Job classification
- Job rotation
- Work layout
- Local decision making

Results reported could include input data such as extent of training, but the main emphasis should be on data that show effectiveness or outcomes. Results reported should also include generic factors such as:

- Safety statistics
- Absenteeism
- Turnover
- Employee satisfaction
- Employee grievances

For some factors, such as absenteeism and turnover, include local or regional comparative data.

Department-specific results should also be reported to determine your departmental work system performance and your employees’ well-being and satisfaction. These factors include:

- Extent of training or cross-training
- Extent and success of self-direction
7.4 Departmental Effectiveness Results 75 points

In this step you will summarize the key operational performance results that contribute to your effectiveness in achieving your EHS department goals. Results reported here should provide key information for analysis (from Step 4) and a review of your performance (from Step 1).

Measures and indicators of effectiveness include such factors as:

♦ Reduced emissions levels
♦ Wastestream reductions
♦ By-product use
♦ Reduction in energy and water usage
♦ Recycling
♦ Reductions in inventory
♦ Reduction in agency citations and penalties
♦ Reductions in agency inspections
♦ Increases in quality and productivity
♦ Reduced lost workdays
♦ Safety statistic
♦ Results of employee satisfaction surveys
♦ Production flexibility
♦ Results of initiatives such as Six Sigma
♦ Third-party assessment results such as ISO audits
♦ Increased use of e-technology

7.4 Management and Social Responsibility Results 75 points

Here you will summarize your key management and social responsibility results with the aim that the EHS department will provide an example of ethical management and measures indicating good citizenship in the community.

Measures include:

♦ Regulatory and legal compliance results
♦ Noteworthy achievements in compliance (e.g., beyond compliance initiatives, recognitions, and awards)
♦ Community outreach activities

If the EHS department has received citations, penalties, or any other adverse actions related to laws, regulations, contracts, or community problems during the past 3 years, the incidents and current status should be summarized in this step.
The benefits of an organization’s EHS functions and performance are often under-valued because of communication barriers between EHS professionals and executive management, and a lack of standard metrics for evaluating all aspects of EHS performance. But this situation is improving with the advent of EHS-business value metrics and well-organized strategies for using them.

EHS professionals must measure the performance of their programs using the tools of business managers and the format and language of the organization’s financial analysts. The results can be integrated and displayed within an overall EHS business strategy.

Several increasingly popular strategies have emerged to help EHS professionals strengthen the links between EHS performance and business value, including EMS/ISO 14000, the balanced organizational scorecard, Six Sigma, and the Baldrige Performance Model.

These metrics and strategies have already been effectively deployed by EHS professionals in corporate settings, and their effectiveness will increase as more professionals use and learn from them.
Appendix A—Glossary of Terms
For Tracking Business Value

- **Cash Flow**—earnings (total income minus total expenses, or profit) plus depreciation of intangibles (e.g., company reputation or brand name). Related terms include free cash flow and net cash flow.

- **Cost/Benefit Analysis**—an analysis of the cost effectiveness of alternative actions or investments that summarizes and compares its costs (money, time, and resources consumed) and benefits (net added value accrued to the firm). There must be a common denominator of measurement, usually money; all values must be expressed in the same unit of measurement for the analysis to be valid.

- **Economic value added (EVA)**—shareholder value created or lost over a set period of time.

- **Earnings (Profit)**—total income minus total expenses.

- **Internal Rate of Return (IRR)**—the rate (expressed in percentage) for which the total present value of future cash flows related to an initial investment equals the cost of the initial investment. It is often used as a central decision criterion for financial specialists, and to rate alternative investments. It measures the time value of money, or when the present value of gains reaches the present value of costs, or zero.

- **Net Present Value (NPV)**—the present value of an investment’s (or expenditure’s) future net cash flow minus the initial investment (expenditure).

- **Payback Period**—a measure of time when the costs of an action or investment pay for themselves. It is also used as a measure of risk; risk increases with the length of payback time.

- **Price/Earnings (P/E)**—the ratio of the market price of a stock or share in a company to the earnings of the stock or share. P/E is used to value companies. It is also useful for comparing the value of a company against other company’s P/E in the same industry, or against a company’s own historical P/E.

- **Productivity**—ability to produce more with the same or less input of time and resources. Labor productivity is the ratio of the output of goods and services to the labor hours devoted to the production of that output (# of units/hours of work). The formula for overall productivity of a labor force: Productivity = [total labor compensation / hours] / [output / hours]. It is often expressed as a percentage of change over time: “Productivity increased 0.5% this quarter from last quarter.”

- **Profit/Loss Balance Sheet**—summarized list of costs and earnings, giving net savings.

- **Return on Investment (ROI)**—an expression of the expected returns from an investment compared to the costs of the investment. ROI is another form of cost/benefit analysis, but it makes the cost/benefit statement in relative terms, as a ratio or percentage. It is applied to many different financial metrics, such as return on assets and average rate of return. In business operational terms, it is often expressed as:
◆ Total dollars saved per year compared with a base year (e.g., 10% savings over last year's expenditure)
◆ Reduced cost per unit of product (e.g., production costs were reduced 5% per unit)
◆ Improved productivity (output increased 2% last quarter)

NOTE: ROI assumes that the benefits were created by a directly associated expenditure. It is very difficult to calculate ROI when conditions other than the investment influence the outcome being measured. For example, the ROI of an effective training program may be unfavorably skewed by high employee turnover.
Appendix B—EHS Employee Satisfaction Survey

This sample employee satisfaction survey is an assessment tool adapted from the Baldrige National Quality Program. The questionnaire can help you assess how your department is performing and how your employees see their roles. You should modify it to address your specific needs.

How Are We Doing?

Your opinion is important to us. There are 39 statements below. For each statement, check the box that best matches how you feel (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree). How you feel will help us decide where we most need to improve. We will not be looking at individual response, but will use the information from our whole group to make decisions. It should take you about 10 to 15 minutes to complete this survey.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I know my department’s mission (what it is trying to accomplish).</td>
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<td>2. My department head uses our company values to guide us.</td>
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<td>3. Management creates a work environment that helps me do my job.</td>
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<td>4. Management shares information about the company.</td>
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<td>5. Management encourages learning that will help me advance in my career.</td>
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<td>6. Management lets me know what it thinks is most important.</td>
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<td>7. My company asks what I think.</td>
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<td>8. As it plans for the future, my company asks for my ideas.</td>
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<td>9. I know the parts of my company’s plans that will affect me and my work.</td>
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<td>10.</td>
<td>I know how to tell if we are making progress on my department’s part of the plan.</td>
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<td>11.</td>
<td>I know who our most important customers are.</td>
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<td>12.</td>
<td>My company keeps in touch with our customers.</td>
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<td>13.</td>
<td>Our customers tell us what they need and want.</td>
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<tr>
<td>14.</td>
<td>I am allowed to make decisions that solve problems for our customers.</td>
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<td>15.</td>
<td>I know how to measure the quality of my work.</td>
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<td>16.</td>
<td>I know how to analyze the quality of my work to see if changes are needed.</td>
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<td>17.</td>
<td>I use these analyses to make decisions about my work.</td>
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<td>18.</td>
<td>I know how the measures I use in my work fit into my company’s overall measures of improvement.</td>
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<td>19.</td>
<td>I get all the important information I need to do my work.</td>
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<td>20.</td>
<td>I get the information I need to know about how my company is doing.</td>
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<td>21.</td>
<td>I can make changes that will improve my work.</td>
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<tr>
<td>22.</td>
<td>The people I work with cooperate and work as a team.</td>
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<td>23.</td>
<td>My boss encourages me to develop my job skills so that I can advance in my career.</td>
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<td>24.</td>
<td>I am recognized for my work.</td>
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<td>25.</td>
<td>I have a safe workplace.</td>
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<tr>
<td></td>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Neither Agree nor Disagree</td>
<td>Agree</td>
<td>Strongly Agree</td>
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<tr>
<td>26.</td>
<td>My boss and my company care about me.</td>
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<td>27.</td>
<td>I can get everything I need to do my job.</td>
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<td>28.</td>
<td>I collect information about the quality of my work.</td>
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<td>29.</td>
<td>We have good processes for doing our work.</td>
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<td>30.</td>
<td>I have control over my work processes.</td>
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<td>31.</td>
<td>My boss is satisfied with my work.</td>
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<td>32.</td>
<td>My work products meet all requirements.</td>
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<tr>
<td>33.</td>
<td>I know how well my company is doing financially.</td>
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<tr>
<td>34.</td>
<td>My company uses my time and talents well.</td>
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<tr>
<td>35.</td>
<td>My company removes things that get in the way of progress.</td>
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<tr>
<td>36.</td>
<td>My company obeys laws and regulations.</td>
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<tr>
<td>37.</td>
<td>My company has high standards and ethics.</td>
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<td>38.</td>
<td>My company helps me help my community.</td>
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<tr>
<td>39.</td>
<td>I am satisfied with my job.</td>
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</tbody>
</table>
Background Literature


