GEMI Survey

EHS Metrics and Processes

April 2007

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GEMI Benchmark Chair
Outline

• Survey Recap
• EHS Leading Indicator Metrics
• Metrics Process and Practice
• Future Benchmarking
Survey Overview

- Survey addresses the management of environment, health or safety (EHS) leading indicator metrics and metrics processes.
- Survey response rate ~50%
  - 21 companies responded to the survey
  - Not all companies completed all questions
- Broad industry coverage
- Although several questions were asked about normalization and external use, very few companies did either of these with most metrics.
- Also review data from a 2003 GEMI metrics survey.
- Thank you to all participants!
Industry Segment

- Building Products
- Diverse
- Semiconductor
- Chemical
- Consumer Products
- Diversified Industrial Goods and Services
- Food/Agri Industry
- Health Care & Health Care Products
- Oil and Gas Production
- Pharmaceutical
- Building Products
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- Semiconductor
- Chemical
- Consumer Products
- Diversified Industrial Goods and Services
- Food/Agri Industry
- Health Care & Health Care Products
- Oil and Gas Production
- Pharmaceutical

EHS Metrics & Processes
Revenue

- $51-$100 Billion
- $10-20 Billion
- $21-$50 Billion
- <$10 Billion
Most companies have EHS metrics, but only half have sustainability metrics.

Leading indicator metrics are comparable, but slightly lower overall.
All companies have leading indicator audit metrics.

Most focus on ensuring follow-up on findings.
Other EHS Audit Leading Indicator Metrics

Several others were identified.
• RC 14001 Management Certifications
• Toller Audits
• Supplier Audits
• % completed on time
• Regulatory inspections with no further actions required.
• Audit findings open more than one year.
• Overdue Status Reports
• % Auditors trained
• Performance Against 10 Audit Quality Criteria By a Third Party
• Overdue Initial Action Plans
• Significant Findings
• Document best practices
Most companies have leading indicator training metrics.

Some respondents questioned whether training is a leading indicator.
Ergonomics Leading Indicator Metrics

“Other” is % new manufacturing equipment receiving an ergo review

Fewer than half of the companies have leading indicator ergonomics metrics.
Over half of the companies have leading indicator safety metrics.

Reporting near misses is the most prevalent.

Food and Pharma were least likely to have safety metrics.
“Other” Safety Leading Indicator Metrics

Several others were identified.

• Unsafe Behaviors per Unsafe Condition
• Resource capability vs. site hazard level
• Global Safety and Health Plan Self Assessment
• Observations, etc.
• Ratio of First Aids/Recordables
Most of the companies have leading indicator PSM metrics. These varied widely. Food and Pharma were least likely to have safety metrics.

PSM Leading Indicator Metrics

- MOC personnel demonstrations overdue
- PSSR recommendations open and overdue
- Operating procedure reviews overdue
- Open/overdue MOC Tech Recommendations
- # of Tests & Inspections temporarily delayed
- Mechanical integrity complete vs. scheduled
- # of open/overdue E-drill recommendations
- # of open/overdue PHA recommendations
- # of open/overdue inc. rec
- PHAs completed vs.scheduled

# of Companies
Most of the companies do not have leading indicator distribution safety metrics.

Companies that transport chemicals were the only ones that did.
About half of the companies have leading indicator occupational health metrics.

Food and Pharma were least likely, although some “chemical” companies did not.
About half of the companies have leading indicator fire safety metrics.

Pharma was least likely, although some “chemical” companies did not.

“Other” is “response to insurance audits” and “Evacuation Drills”.

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Most companies have Product Stewardship leading indicator metrics.

Energy-related metrics were the most prevalent.
“Other” Product Stewardship Metrics

- Information entered in database
- Environmental risk assessment
- Energy consumption in use
- Material content
- Carbon footprint
- Reuse / recyclability
- Packaging reductions
Sustainability Leading Metrics - Footprint

All of the companies have leading indicator sustainability metrics.

GHG, energy, water and waste were the most prevalent.

Most of these were normalized.
Almost all of the companies communicate leading indicator sustainability metrics externally.

GHG, energy, water, and waste were the most prevalent.
Other Sustainability Leading Metrics

Several others were identified.

- Total solid waste
- VOC emissions,
- Pollution prevention projects (#, savings, pollution prevented)
- Recycling rates,
- Employee ride share
- Philanthropy - contributions to external environmental education,
- CSR activities
- Access to Medicine
- Many others
Sustainable Growth Leading Metrics

Only three companies have established sustainable growth metrics.

- Sales of products that reduce the use of energy, water, etc.
- Sales of products that protect or increase health
- R&D $ spent on products that improve sustainability
- Sales of products based on renewable resources
- Other

None
Sustainability Goals

Common Goals

- Reduce Energy Consumption
- Reduce GHG emissions
- Reduce Water Use
- Reduce Hazardous Waste
- Reduce Accident Rate
- Reduce CO2
- Water Recycle

60% of companies have established sustainability goals.

These were the most prevalent.

Yes
No
Why Do Companies Develop Leading Metrics?

Most use leading metrics to measure organizational performance.

- Organizational performance: 15 companies
- Influence stakeholders: 6 companies
- Competitive position: 5 companies
- Compensation and reward: 3 companies
- Other: 1 company

Most use leading metrics to measure organizational performance.
### New Metrics - Practical Considerations

#### What steps do companies perform when developing new EHS metrics?

<table>
<thead>
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<th>2007</th>
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“Off-shore” impact implications was the biggest change since 2003.
## New Metrics – “Value-Added” Factors

### Top 10 “value-added” factors companies consider when assessing a GLOBAL EHS metric

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With the exception of “risk”, findings were similar to 2003.
### Leading Indicator – “Value-Added” Factors

Top 10 “value-added” factors companies consider when assessing a LEADING EHS metric

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<thead>
<tr>
<th>Global</th>
<th>Leading</th>
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No major differences between “leading” and “Global”.

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GEMI

EHS Metrics & Processes 27
Data Sources

Findings are comparable to 2003.

2007 Data
- Inventory and production records
- Regulatory reports
- Audit results / findings
- Management systems reviews
- Computerized MIS
- Monitoring / measuring equipment
- Financial and accounting systems
- Interviews / discussions
- External reports and studies
- Quality management systems

2003 Data
- Regulatory reports
- Audit results / findings
- Computerized MIS
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- Management systems reviews
- Inventory and production records
- External reports and studies
- Interviews / discussions
- Quality management systems
- Financial and accounting systems
Data Capture & Validation

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<thead>
<tr>
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<th>2007</th>
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<tbody>
<tr>
<td>Manual Process</td>
<td>0%</td>
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<tr>
<td>Some Automation</td>
<td>12%</td>
<td>10%</td>
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<td>Electronic and Manual</td>
<td>53%</td>
<td>40%</td>
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<tr>
<td>Mostly Electronic</td>
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<td>Electronic and Manual</td>
<td>18%</td>
<td>40%</td>
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<tr>
<td>Integrated MIS</td>
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Some growth in automation of metrics gathering processes

Validation

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</tr>
</thead>
<tbody>
<tr>
<td>Via audit programs</td>
<td>53%</td>
<td>71%</td>
</tr>
<tr>
<td>Formal internal data checking processes</td>
<td>65%</td>
<td>71%</td>
</tr>
<tr>
<td>Searches of reg. agency or 3rd-party databases</td>
<td>6%</td>
<td>38%</td>
</tr>
<tr>
<td>Via an independent, 3rd-party consultant</td>
<td>47%</td>
<td>10%</td>
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<tr>
<td>No validation practices implemented</td>
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Less reliance on databases and audits; more use of consultants.
Overview of Metrics Processes

- Most companies do not have a problem with management support of the EHS metrics program.

- Support seems to be lower than in the previous survey.
Conclusions

• All companies use leading indicator metrics in some area of EHS. Sustainability and auditing are highest.
• The use of lagging indicators outweighs the use of leading indicators.
• There are many different leading metrics in use with the broadest range in the area of sustainability.
• Differences exist between metrics that are used internally and those that are communicated externally. Sustainability was an exception.
• EHS metrics are linked to the business.
• Findings are comparable to a similar 2003 survey on metrics processes and management support.
• Companies continue to search for better metrics.
• Questions /comments?
Future Benchmarking

Organization structure changes and support for HSE is the next topic for benchmarking.

Q19. What other topics should GEMI benchmark in 2007? (Check all that apply.) (n=24)

- Leading indicators for HSE: 54%
- Organizational structure changes and support for HSE: 46%
- Risk management: 42%
- Auditing: 38%
- IT management systems for HSE: 21%
- Environmental/safety incentives: 21%
- Sustainability trends in the retail industry: 17%
Background Slides
Audit Normalization and External Use

Normalization
• Limited use of normalization beyond the use of %.
• Focus is on % completed.

External Use
• Four companies communicate # of regulatory findings externally.
• One publishes their 3rd party audit report
• One publishes # of audits completed vs. scheduled.
• Other metrics published include:
  – Total Findings
  – Open Findings
EHS Training Normalization/External Use

Normalization
• One company collects training hours per employee

External Use
• Two companies publish # of training hours provided
• One company publishes # of people trained
• One shares data with SRI
Ergonomics Normalization/External Use

- Normalization is focused on % of capital projects assessed, % high risk jobs action plans developed and % jobs assessed.
- External use is limited to one company that publishes jobs and capital projects assessed.
Safety Normalization/External Use

• Normalization is generally on incidents per exposure hours
• Limited external use of metrics – one company
Other PSM Metrics

- Mechanical Integrity Test results
- Corrective Action Completion
- Process Hazard Management Plan progress - % complete
- Normalization is limited
- Only one company publishes data externally.
Distribution Safety Leading Metrics

• Normalization is limited to %
• No external usage
Occupational Health Metrics

• Normalization and External Usage are minimal.
## Normalization of Sustainability Metrics

| Metric Type                          | Water usage in water-scarce areas | % Water reused or recycled | Total COD or BOD from wastewater emissions | Energy usage | % of total energy from renewable energy sources | Greenhouse gas emissions | Air carcinogen emissions | Hazardous waste disposal | Substitution of more sustainable chemicals | Fleet fuel efficiency | Cost reduction from energy saving programs | Land area saved from raw material reductions | Other (Please specify) | Revenue per $1000 of sales | Average per vehicle type | Solid waste per $1000 of sales | None | Sales per employee sales per dollar of sales | None | Net sales per employee sales per dollar of sales | None | Net sales per employee sales per dollar of sales | None | Sales per employee sales per dollar of sales | None | Sales per employee sales per dollar of sales | None |
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| **Total Water usage**               |                                   |                           |                                            |             |                                            |                           |                          |                          |                                                             |                     |                                            |                                                              |                               |                           |                                           |                                           |                           |                                           |                                           |                                           |                           |                                           |                                           |                                           |                           |
| **Water Index Calculation**         |                                   |                           |                                            |             |                                            |                           |                          |                          |                                                             |                     |                                            |                                                              |                               |                           |                                           |                                           |                           |                                           |                                           |                                           |                           |                                           |                                           |                                           |                           |
| **Cost reduction from energy saving programs** |                     |                                           |                                           |                           |                                           |                           |                          |                          |                                                             |                     |                                            |                                                              |                               |                           |                                           |                                           |                           |                                           |                                           |                                           |                           |                                           |                                           |                                           |                           |
| **Sales**                           |                                   |                           |                                            |             |                                            |                           |                          |                          |                                                             |                     |                                            |                                                              |                               |                           |                                           |                                           |                           |                                           |                                           |                                           |                           |                                           |                                           |                                           |                           |
| **Sales revenue**                   |                                   |                           |                                            |             |                                            |                           |                          |                          |                                                             |                     |                                            |                                                              |                               |                           |                                           |                                           |                           |                                           |                                           |                                           |                           |                                           |                                           |                                           |                           |
| **Net sales**                       |                                   |                           |                                            |             |                                            |                           |                          |                          |                                                             |                     |                                            |                                                              |                               |                           |                                           |                                           |                           |                                           |                                           |                                           |                           |                                           |                                           |                                           |                           |
| **Net sales for VOC emissions**     |                                   |                           |                                            |             |                                            |                           |                          |                          |                                                             |                     |                                            |                                                              |                               |                           |                                           |                                           |                           |                                           |                                           |                                           |                           |                                           |                                           |                                           |                           |
| **Net sales for VOC emissions**     |                                   |                           |                                            |             |                                            |                           |                          |                          |                                                             |                     |                                            |                                                              |                               |                           |                                           |                                           |                           |                                           |                                           |                                           |                           |                                           |                                           |                                           |                           |

### Notes
- **Water Index Calculation**
  - Total Sales $ per dollar of sales
  - Sales revenue per dollar of sales
- **Cost reduction from energy saving programs**
  - Sales per employee sales per dollar of sales
- **Sales**
  - Sales per employee sales per dollar of sales
- **Net sales**
  - Net sales per employee sales per dollar of sales
- **Sales for VOC emissions**
  - Sales per employee sales per dollar of sales
- **Other (Please specify)**
  - Other metric types (e.g., cost reduction, land area saved, etc.)

### Definitions
- **Total Water usage**, **% Water reused or recycled**, **Total COD or BOD from wastewater emissions**, **Energy usage**, **% of total energy from renewable energy sources**, **Greenhouse gas emissions**, **Air carcinogen emissions**, **Hazardous waste disposal**, **Substitution of more sustainable chemicals**, **Fleet fuel efficiency**, **Cost reduction from energy saving programs**, **Land area saved from raw material reductions**
- **Water usage in water-scarce areas**, **per $1000 of sales**, **% of total energy from renewable energy sources**, **Total COD or BOD from wastewater emissions**, **energy usage**
- **Cost reduction from energy saving programs**
- **Sales**
- **Net sales**
- **Sales for VOC emissions**
- **Other (Please specify)**

### Formulas
- **Water Index Calculation**
  - Total Sales $
  - Sales revenue
  - Net sales
  - Net sales for VOC emissions

- **Sales**
  - Sales per employee sales per dollar of sales
- **Net sales**
  - Net sales per employee sales per dollar of sales
- **Sales for VOC emissions**
  - Sales per employee sales per dollar of sales
- **Other (Please specify)**
  - Other metric types (e.g., cost reduction, land area saved, etc.)
Product Stewardship - External

- None
- Energy input per unit of product
- Unit of waste per unit of product 'e factor'
- Time to respond to customer inquiries
- % completion of product stewardship action items
- % Product Stewardship review completed per schedule

# of Companies
Other Sustainability Goals

- Reduce General absence rate
- Reduce Ecobalance
- COD
- Mass efficiency
- Local Protection of EHS
- Contributing to Community Success
- Product Safety Commitment
- Sustainable Chemistry
- Products Designed to Solve World Challenges
- Air Carcinogens
- Fleet Fuel Efficiency
- Independent Verification of environmental management systems
- Products that Reduce Greenhouse Gas Emissions
- Revenues from Non-Depletable Resources
- Environmentally Smart Market Opportunities from R&D
- Environmental and economic sustainability goals
- Access to medicine
- Reduce office paper consumption
- Education – Educate Teachers
- Track stakeholder feedback in community relations
- Achieve a 33% worldwide volunteer rate
- Partnerships with Historically Black Colleges
- Support women and under-represented minorities.
- Support diversity suppliers.
- Contractor health and safety performance
- Maintain ethical sourcing standards,
- Develop sustainable agriculture programs.
- Minimize the environmental impacts of our business.
- Contribute to consumer diet, health and lifestyle solutions.
- Help create prosperous, educated, inclusive and healthy communities