

AIChE Sustainability Index™ Update

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March 2015

- Assesses a representative set of large, publicly traded chemical companies
 - Air Products
 - Akzo Nobel
 - Ashland
 - BASF
 - Celanese
 - Dow
 - DuPont
 - Eastman
 - LyondellBasell
 - Praxair
 - (Rohm & Haas)
- 7 US, 3 foreign-based

- **Strategic Commitment**
 - Stated sustainability commitments, reporting, corporate goals and programs
- **Environmental Performance**
 - Resource use, GHG, other emissions, compliance
- **Safety Performance**
 - Employee safety, process safety, plant security
- **Product Stewardship**
 - Assurance system, risk communication, legal proceedings

➤ Social Responsibility

- Stakeholder partnership, social investment, image in community

➤ Sustainability Innovation

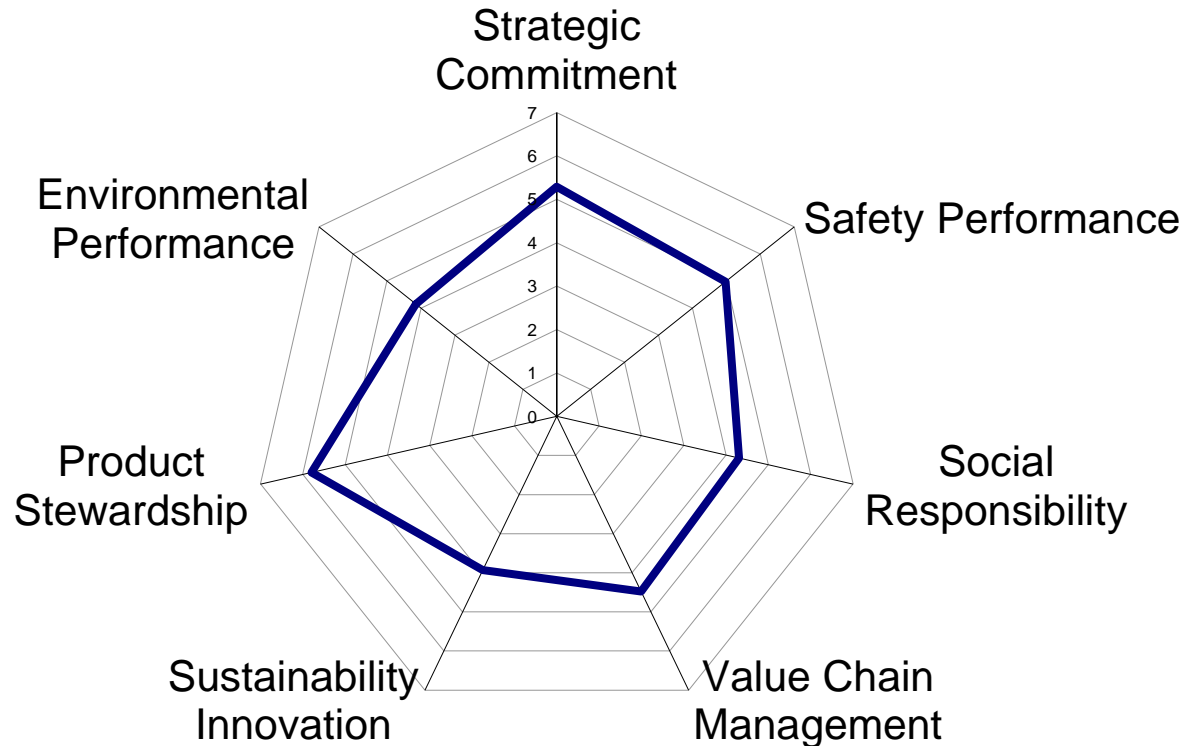
- R&D spending, innovation for sustainability, integration into process, results

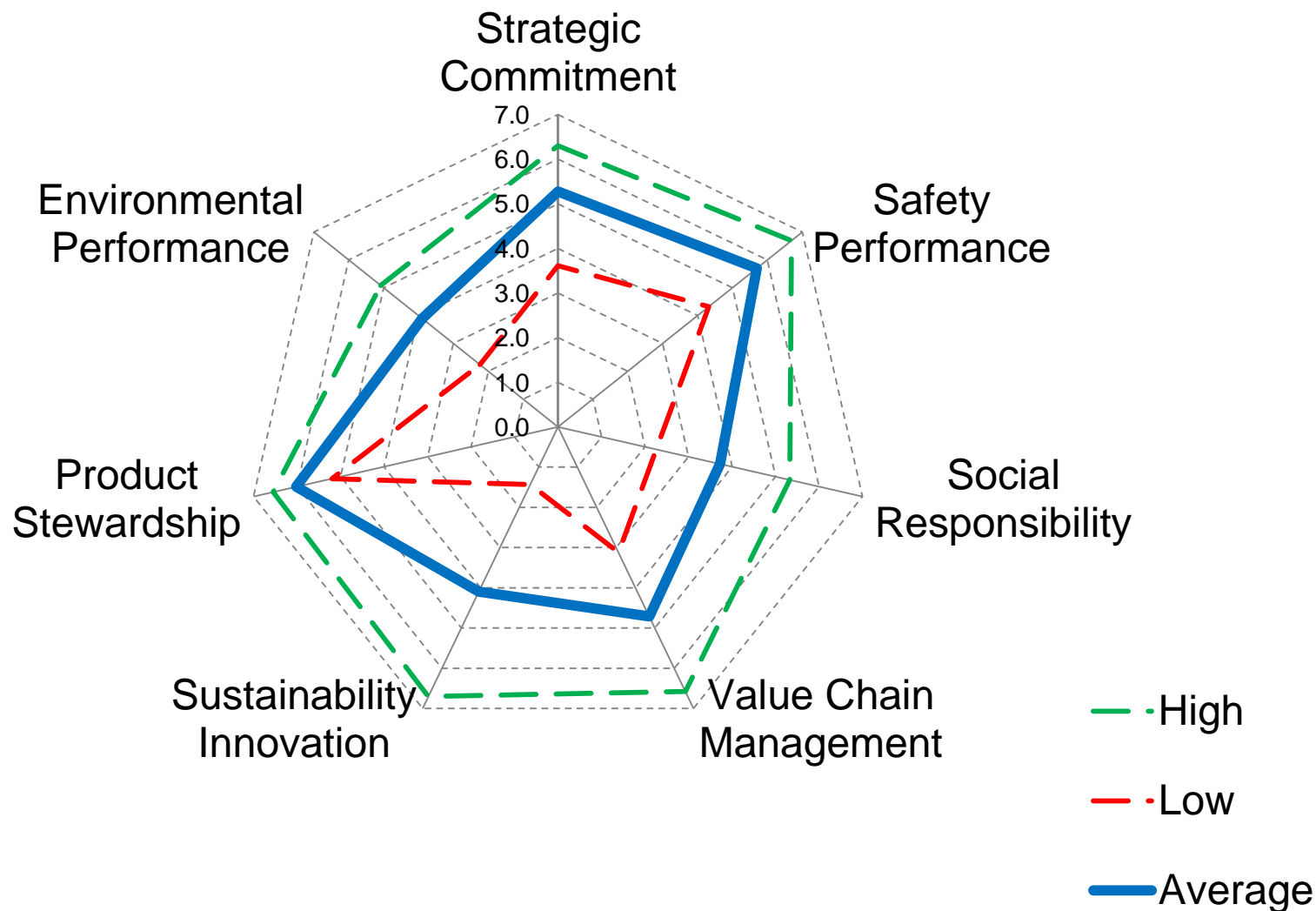
➤ Value-Chain Management

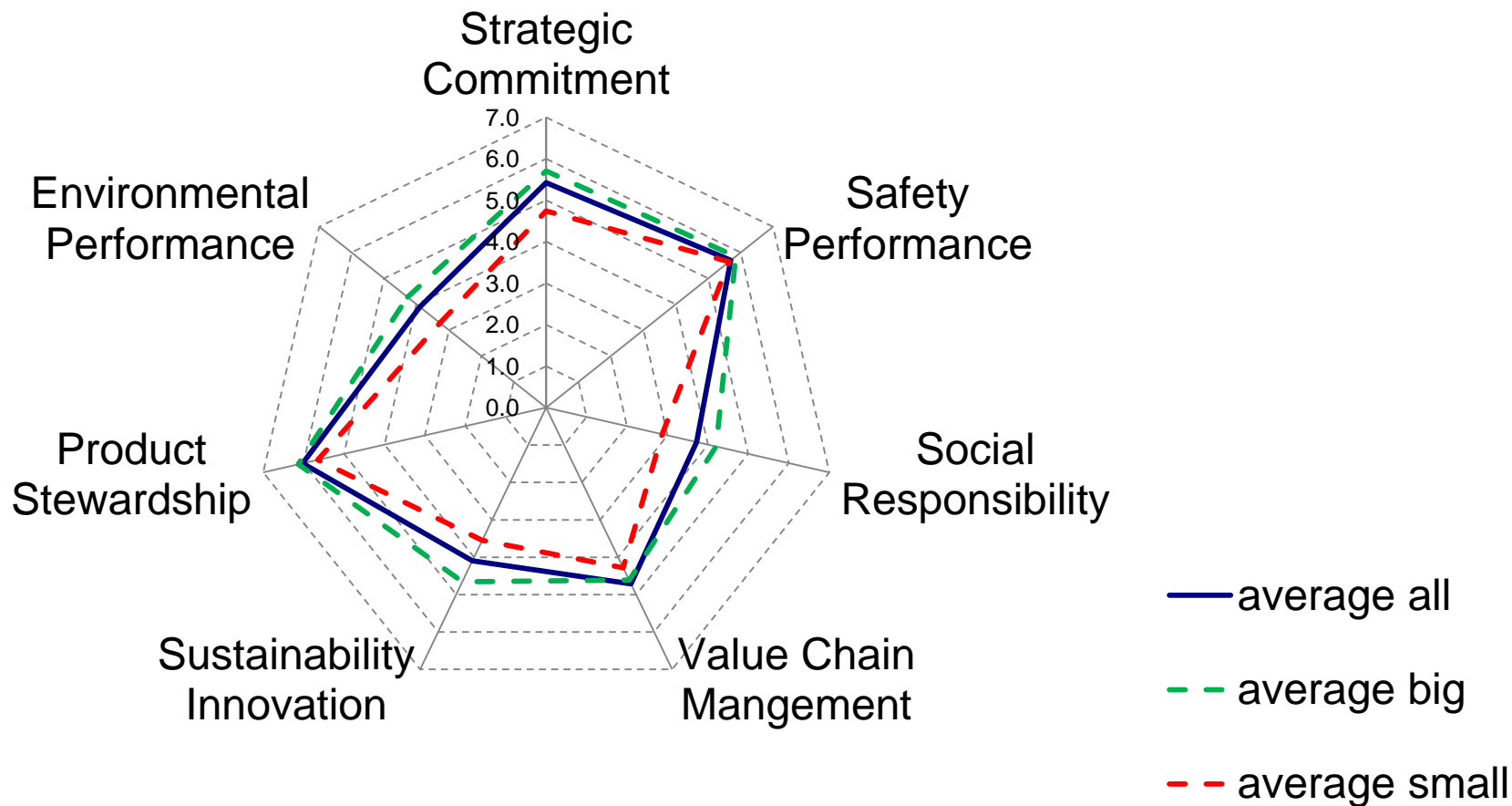
- EMS, supply chain management

- Company reports
 - Annual Corporate Reports, SEC 10-K
 - Sustainability/EHS Reports
- ACC / Responsible Care reports
- Government records
 - EPA (TRI & compliance history)
 - CSB incident reports
 - USPTO patent database
- Technical publications / general media reports
- Other sustainability indexes / SRI investment analyses
- Web searches

- Assessed on 7 “factors”
- Scored from 0 to 7
- Evaluates processes & performance relative to best practice



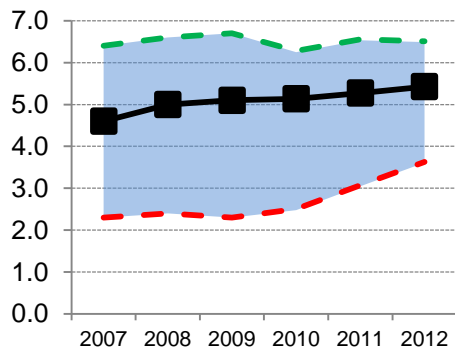




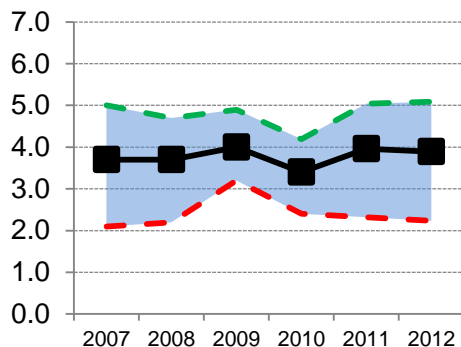
Big >\$20B

Small < \$10B

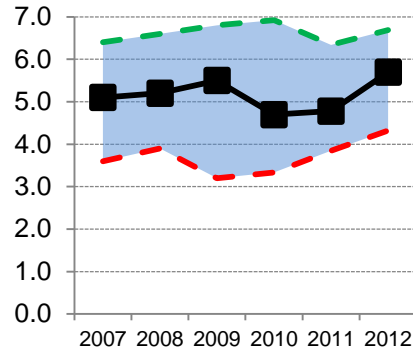
Strategic Commitment



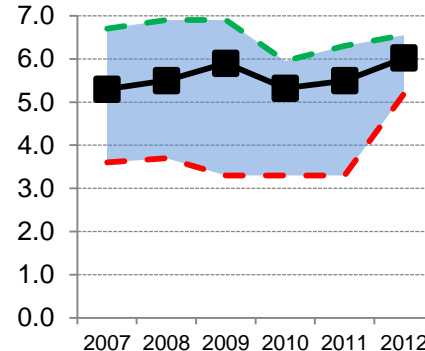
Environmental Performance



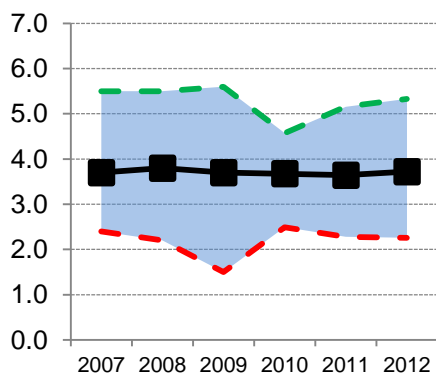
Safety Performance



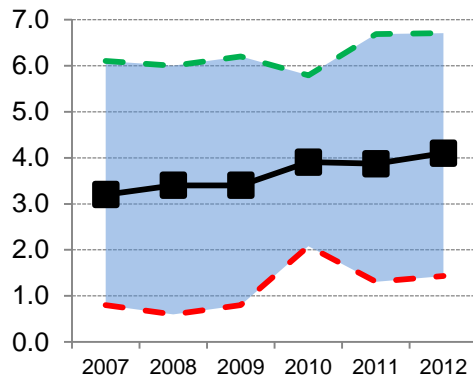
Product Stewardship



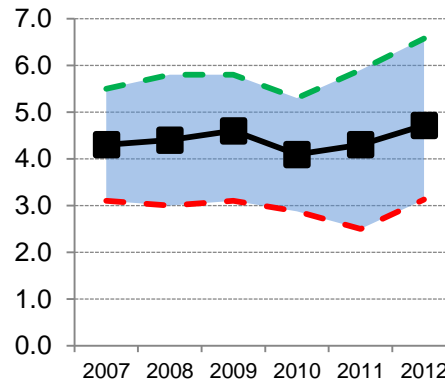
Social Responsibility



Sustainability Innovation



Value Chain Management



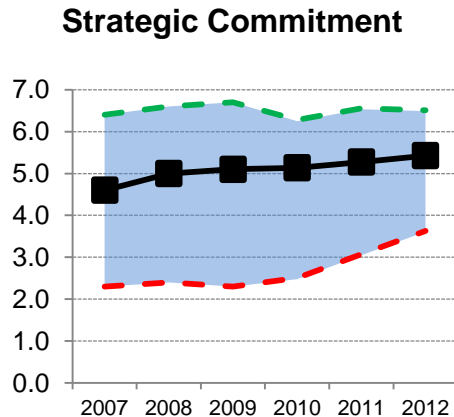
--- High
--- Low
■ Average

➤ Includes:

- Stated sustainability commitments, reporting, corporate goals and programs

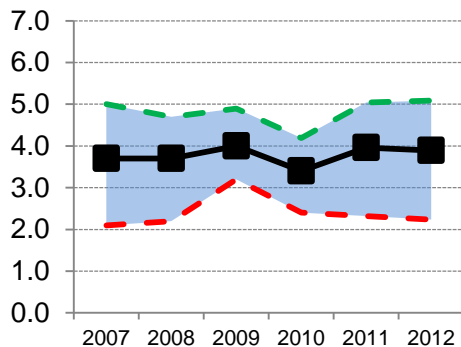
➤ Key trends:

- Most companies publish sustainability reports and/or have dedicated websites
- Reports are in better conformance with standard metrics (set by GRI)
- More companies set sustainability goals, programs



- Includes:
 - Resource use, GHG, other emissions, compliance

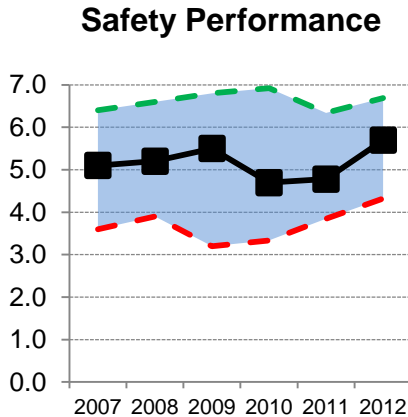
Environmental Performance



- Key trends:
 - Resource use and GHG emissions continue to decrease, despite increased production
 - Better reporting on environmental performance
 - “Smaller” companies closing the gap

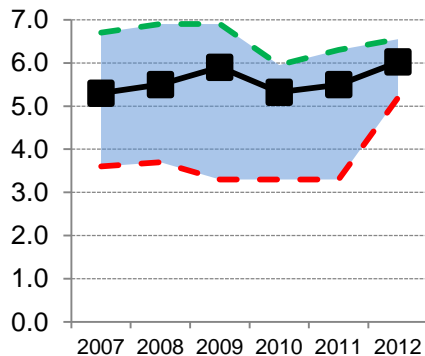
- Includes:
 - Employee safety, process safety, plant security

- Key trends:
 - Continued decrease in personnel safety incidents
 - Most companies have large reductions in process safety incidents; these incidents are less severe (as defined by ACC)



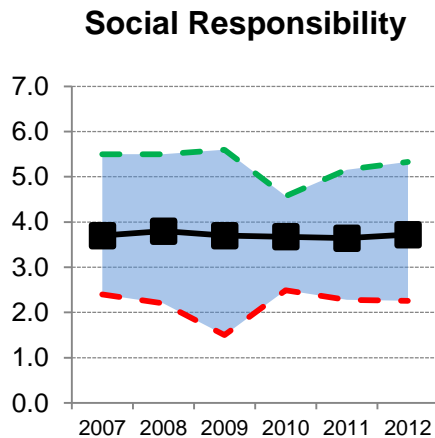
- Includes:
 - Assurance system, risk communication, legal proceedings

Product Stewardship



- Key trends:
 - RC and REACH implementation leveling the field
 - Companies involved in legal proceeding generally dealing with legacy issues

- Includes:
 - Stakeholder partnership, social investment, image in community

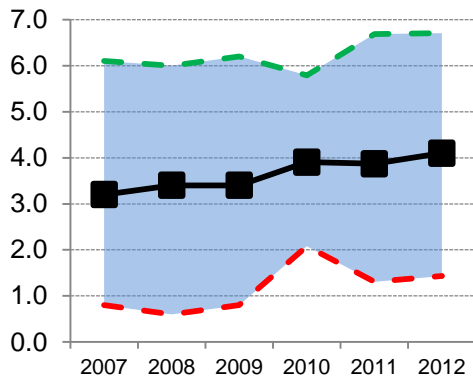


- Key trends:
 - Little changes
 - Larger companies continue to lead especially in stakeholder partnership programs

➤ Includes:

- R&D spending, innovation for sustainability, integration into process, results

Sustainability Innovation

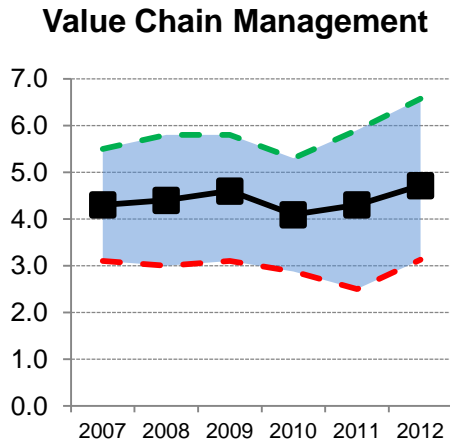


➤ Key trends:

- Increased total R&D expenditures
- Improvements in individual companies (green chemistry, sustainability decision-support)
- LCA and total cost analysis being incorporated

- Includes:
 - EMS, supply chain management

- Key trends:
 - Progress in EMS implementation across facilities at both corporate and facility levels
 - Most companies have supplier policies



Environmental Performance

Resource use <i>Weight: 30%</i>	Energy (15%)	<input type="checkbox"/> Energy use per net sales <input type="checkbox"/> Use of renewable energy
	Materials (5%)	<input type="checkbox"/> Material use per net sales or per mass of product <input type="checkbox"/> Use of renewable materials
	Water (10%)	<input type="checkbox"/> Water use per net sales
Greenhouse-gas emissions <i>Weight: 20%</i>		<input type="checkbox"/> GHG emissions per net sales <input type="checkbox"/> External recognition for GHG emission reduction efforts
Other emissions <i>Weight: 25%</i>		<input type="checkbox"/> Reduction in air emissions (ex-CO ₂) <input type="checkbox"/> Reduction in wastewater releases <input type="checkbox"/> Reduction in hazardous waste releases
Compliance management <i>Weight: 25%</i>		<input type="checkbox"/> Environmental liability per net sales <input type="checkbox"/> Environmental fines and penalties per net sales <input type="checkbox"/> Environmental capital expenditures per net sales

Product Stewardship

<p>Assurance System <i>Weight: 50%</i></p>	<ul style="list-style-type: none"> <input type="checkbox"/> Incorporation of Responsible Care® Product Safety Process <input type="checkbox"/> Engaging customers to assure product safety <input type="checkbox"/> Engaging customers to assure product environmental performance <input type="checkbox"/> Supplier partnerships/requirements related to product performance <input type="checkbox"/> Strategic stakeholder engagement <input type="checkbox"/> Strategic goals & policies
<p>Risk Communication <i>Weight: 40%</i></p>	<ul style="list-style-type: none"> <input type="checkbox"/> Incorporation of Responsible Care® Risk Communication Process <input type="checkbox"/> System in place to meet REACH requirements <input type="checkbox"/> Strategic goals & policies
<p>Legal proceedings <i>Weight: 10%</i></p>	<ul style="list-style-type: none"> <input type="checkbox"/> Active legal proceedings on product safety, risk, and toxicity

- AIChE Sustainability Index™ is proven useful in tracking sustainability among major chemical companies
- 6 years of results suggests:
 - steady improvements overall
 - narrowing of the gap, especially in strategic commitments, environmental performance, and product stewardship
- Key trends uncovered by the analysis include:
 - more sustainability reports and programs
 - energy efficiency
 - process and personnel safety
 - REACH implementation
 - sustainability decision-support
 - supply-chain management

- Continued attention regarding ‘sustainability’ in chemical industry
- Need for meaningful metrics to benchmark sustainability progress
- Financial, other sustainability indexes lack technical focus
- Other indexes not updated on yearly basis or discontinued or very costly
- Drill down (to facilities, implementation), but broad enough
- Targeted for managers, not for executives or investors
- Facilitate benchmarking to peers, best practices
- Based on public data, meaning little, if any, additional effort
- Scores can be kept confidential

- AIChE SI for chemical processing industry (Public)
 - Published in *CEP*
 - Birds-eye view on sustainability in CPI
 - Currently focused on major chemical companies
 - Do not disclose individual company results
 - For engineers, managers, public

- AIChE SI for individual chemical companies (By subscription)
 - Benchmarking reports
 - Assess performance relative to peers
 - Gap assessment in performance and reporting
 - Intended for managers in charge of sustainability

- *Assess your sustainability performance*
 - Where company lacks in terms of best practice
 - Where company lacks in terms of reporting
 - Recommendations
- *Benchmark your company's sustainability performance against your peers*
 - Comparison to peers (CPI, by subsector, size)
 - Overall scores for 7 factors
 - Sub-category scores
 - Data sources
 - Data gaps – where we cannot perform assessment due to unavailable data
- *Participate in creating a more robust sustainability index*

- There are many!!! Different purposes:
 - Investment guides
 - Ethical investment/SRI
 - Long-term return (“stock picks”)
 - Stock market indexes (subset of market)
 - Stakeholder ratings (e.g., how good is your report)
 - Benchmarks for company management

Comparison of Scope

	DJSI	FTSE 4Good	RiskMatrix	Pacific SI	AIChE SI
Governance	✓	✓	✓	Some	Some
Reporting	✓	✓	?	✓	Some
Investment risk	Some	Some	✓		
Environmental performance	Some	Some	✓ ?	Some	✓
Social performance (incl. H&S)	✓	✓	✓	Some	Some
Product stewardship			✓ ?		✓
Value chain management		Some	✓ ?		✓
Sustainability innovation			✓ ?		✓

What Indexes Offer

	DJSI	FTSE4Good	RiskMatrix	Pacific SI	AIChE SI
Investment Guide	✓	✓	✓		
Market Index	✓	✓			
Report Analysis	✓	✓	✓	✓	✓
Management Benchmark	✓	✓	✓		✓
Advisory Services	✓	✓	✓		✓
Cost	\$\$\$	\$\$\$	\$\$\$	N/A	\$

Discussion