

MSCI ESG Ratings Methodology: Chemical Safety Key Issue

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October 2023

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Introduction

This document provides essential information on the components of the Chemical Safety Key Issue to enable users of ESG Ratings to understand how our outputs are determined. Chemical Safety is a Key Issue in the Social Pillar of the MSCI ESG Ratings model. Companies are evaluated on the possible presence of harmful chemicals in their product portfolio, their potential exposure to strengthening or pending chemical regulations and their efforts to develop less-harmful alternatives.

For additional details on the MSCI ESG Ratings Model, refer to Section 2, Data, ratings and scores, of “ESG Ratings Methodology.”

Exhibit 1: MSCI ESG Key Issue hierarchy

3 Pillars	10 Themes	33 ESG Key Issues
Environmental	Climate Change	Carbon Emissions
		Climate Change Vulnerability
		Financing Environmental Impact
		Product Carbon Footprint
	Natural Capital	Biodiversity & Land Use
		Raw Material Sourcing
		Water Stress
	Pollution & Waste	Electronic Waste
		Packaging Material & Waste
		Toxic Emissions & Waste
	Environmental Opportunities	Opportunities in Clean Tech
		Opportunities in Green Building
		Opportunities in Renewable Energy
Social	Human Capital	Health & Safety
		Human Capital Development
		Labor Management
		Supply Chain Labor Standards
	Product Liability	Chemical Safety
		Consumer Financial Protection
		Privacy & Data Security
		Product Safety & Quality
	Stakeholder Opposition	Responsible Investment
		Community Relations
		Controversial Sourcing
	Social Opportunities	Access to Finance
		Access to Health Care
		Opportunities in Nutrition & Health
Governance	Corporate Governance	Board

3 Pillars	10 Themes	33 ESG Key Issues
	Corporate Behavior	Pay
		Ownership & Control
		Accounting
		Business Ethics
		Tax Transparency

Risks associated with this Key Issue

- Loss of access to markets due to regulatory reform.
- Loss of revenue due to supply disruptions and changing consumer demand.
- Increased costs from reformulating products.

Chemical Safety Key Issue Score

The Chemical Safety Key Issue Score evaluates the company's level of exposure to, and management of, risks on this Key Issue. The Key Issue Score is based on the Exposure Score and the Management Score using the formula below. The Exposure Score and the Management Score are combined such that a higher level of exposure requires a higher level of demonstrated management capability in order to achieve the same overall Key Issue Score.

$$KI_i = 7 - (\max(EXP_i, 2) - MGMT_i)$$

Where:

- KI_i is the Key Issue Score for company i .
- EXP_i is the Exposure Score for company i .
- $MGMT_i$ is the Management Score for company i .

Chemical Safety Management Score

The Chemical Safety Management Score evaluates the company's ability to manage its exposure to risks on this Key Issue. It is based on an average of the scores associated with each of the categories listed below, modified by Controversies. These scores are derived from data points that are scored on a 0-10 scale, with 10

corresponding to best practice and 0 corresponding to lack of management. Refer to Section 3.3, Analyzing risk management, of “ESG Ratings Methodology” for additional details. Sources are company disclosures except where otherwise indicated. The following formula is used to calculate the Chemical Safety Management Score - Excluding Controversies:

$$MGMT_{CHS,i} = \frac{STRAT_{CHS,i} + PROI_{CHS,i}}{2}$$

Where:

- $MGMT_{CHS,i}$ is the Chemical Safety Management Score - Excluding Controversies for company i .
- $STRAT_{CHS,i}$ is the Strategy Score for company i .
- $PROI_{CHS,i}$ is the Programs & Initiatives Score for company i .

The following data points, without constituting an exhaustive list, are representative of the inputs to the Management Score and are used in the Management Score calculation:

Management Score category: Strategy Score

- **Scope of chemical phase-out plan.**
Definition: The scope of products or chemicals of concern that the company is targeting to phase out.
- **Level of efforts to identify substances for regulatory risk.**
Definition: The level of identification of chemicals that are regulated or have the potential to be regulated in the company’s products. Best practice is to identify all chemicals.

Management Score category: Programs & Initiatives Score

- **Scope of disclosure of registration and use of regulated substances.**
Definition: The level of disclosure around substances that fall within regulatory registration requirements. Best practice is to disclose all regulatory registrations and use.

- **Environmental and health standards in new product design.**

Definition: Indicates whether the company has a formal process to apply environmental and health standards in new product design.

- **Demonstrated track record of reducing reliance on substances of concern.**

Definition: Indicates whether the company has demonstrated a track record of introducing viable alternatives to high-concern substances. Applies specifically to chemical producers.

- **Demonstrated track record of reducing reliance on substances of concern.**

Definition: Indicates whether the company has demonstrated a track record of introducing viable alternatives to high-concern substances. Applies specifically to product manufacturers other than chemical producers.

- **Initiatives to improve consumer awareness on product chemical content.**

Definition: The level of initiatives to improve consumer awareness on product chemical content through channels that are easy for consumers to access. Best practice is to provide information regarding product chemical content and usage to consumers. Applies specifically to product manufacturers.

Controversies

A controversy deduction ranging from 0 to 5 points is subtracted from the overall Management Score, based on the severity and type of controversies facing the company on this Key Issue. The following categories of controversies are used in the assessment.

- Chemical safety controversies.

For more details on how controversies are included in the MSCI ESG Ratings model, refer to Section 3.3.2, Controversies cases, of “ESG Ratings Methodology.”

Chemical Safety Exposure Score

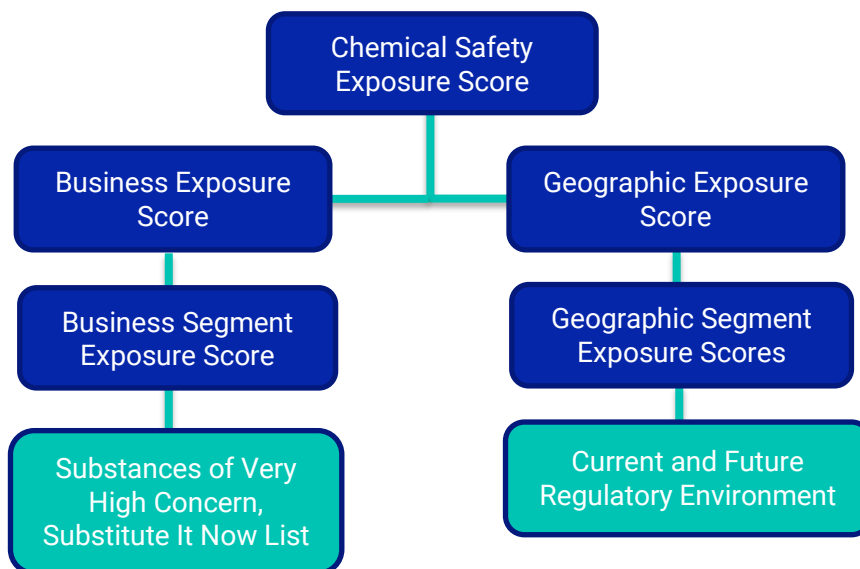
The Chemical Safety Exposure Score evaluates the company's exposure to risks on this Key Issue. It is based on the Business and Geographic Exposure Scores. The Geographic Exposure Score functions as a multiplier on the Business Exposure Score, with an impact ranging from -50% to +50%. The Business and Geographic Exposure Scores are scored on a 0-10 scale, with 10 corresponding to the highest risk and 0 corresponding to the lowest risk. Refer to Section 3.2, Analyzing risk exposure, of "ESG Ratings Methodology" for additional details. The following formula is used in the Exposure Score calculation:

$$EXP_{CHS,i} = BUS_{CHS,i}(1 + 0.1(GEO_{CHS,i} - 5))$$

Where:

- $EXP_{CHS,i}$ is the Chemical Safety Exposure Score of company i .
- $BUS_{CHS,i}$ is the Business Exposure Score of company i .
- $GEO_{CHS,i}$ is the Geographic Exposure Score of company i .

Exhibit 2: Exposure Score components



Business Exposure Score

"The Business Exposure Score is a weighted average of the Business Segment Exposure Scores of a company's business segments. Scores are weighted by the proportion of a company's total revenue in each business segment, using the following formula to calculate the Business Exposure Score:

$$BUS_{CHS,i} = \sum_{j=1}^{n_i} w_{Revenue,i,j} BSE_{CHS,j}$$

Where:

- $BSE_{CHS,j}$ is the Business Segment Exposure Score for business segment j .
- $w_{Revenue,i,j}$ is the weight of business segment j for company i based on the contribution to total company revenue.
- n_i is the number of business segments of company i .

Business Segment Exposure Scores

The Business Segment Exposure Score of a business segment is based on a mapping of the business segment as disclosed by the company to a corresponding business activity. MSCI ESG Research uses the Standard Industrial Classification (SIC) system along with industry-specific adjustments to define business activities. The score associated with a business activity is used to calculate a Business Segment Exposure Score. Each business activity score is determined by an assessment of the number of harmful substances present in a business activity's products.

For business activities involved in manufacturing, the Business Segment Exposure Score is calculated as follows:

$$BSE_{CHS,j} = (0.7SVHC_j) + (0.3SIN_j)$$

Where:

- $BSE_{CHS,j}$ is the Business Segment Exposure Score for business activity j .
- $SVHC_j$ is the number of substances of very high concern present in business activity j 's products.
- SIN_j is the number of substances from the Substitute It Now list present in business activity j 's products.

Substances of very high concern are hazardous substances with severe consequences and carry a weight of 70%. The Substitute It Now list is a list of hazardous chemicals that are likely to face regulatory restrictions in the future and carry a weight of 30%.

For business activities involved in the intermediate goods and service industry, the Business Segment Exposure Score is calculated as follows:

$$BSE_{CHS,j} = \frac{(0.7SVHC_j) + (0.3SIN_j)}{2}$$

For business activities involved in retail, the Business Segment Exposure Score is calculated as follows:

$$BSE_{CHS,j} = PPL_j((0.7SVHC_j) + (0.3SIN_j))$$

Where:

- PPL_j is the percentage of revenue contribution from private labels for the retail business activity j .

The percentage of revenue contribution from private labels is compiled from company-level information, which is aggregated to a business activity level. This indicator limits a retailer's exposure to chemical safety based on the average percentage of sales from products manufactured or packaged by the retailer.

Geographic Exposure Score

The Geographic Exposure Score is a weighted average of the Geographic Segment Exposure Scores of the countries and regions in which a company operates. Scores are weighted by the proportion of a company's total revenue in each geographic segment through the following equation:

$$GEO_{CHS,i} = \sum_{r=1}^{n_i} w_{Revenue,i,r} GSE_{CHS,r}$$

Where:

- $GSE_{CHS,r}$ is the Geographic Segment Exposure Score in region r .

- $w_{Revenue,i,r}$ is the weight of total revenues in region r for company i .
- n_i is the number of geographic segments for company i .

For geographic segments disclosed as regions (example: Asia Pacific), a nominal GDP-weighted country aggregation is used to calculate region-level scores, using the following equation:

$$GSE_{CHS,r} = \sum_{c=1}^{n_r} w_{GDP,r,c} GSE_{CHS,c}$$

Where:

- $GSE_{CHS,c}$ is the Geographic Segment Exposure Score of country c .
- $w_{CHS,r,c}$ is the specific weight of country c within region r .

Geographic Segment Exposure Scores

The Geographic Segment Exposure Score is determined by an assessment of the current and future regulatory environment for chemical safety in a country. Countries with stronger chemical safety regulations are assigned a higher score. The Geographic Segment Exposure Score is calculated using the following formula:

$$GSE_{CHS,c} = \text{Max}\{((0.7CR_c) + (0.3FR_c)), CR_c\}$$

Where:

- $GSE_{CHS,c}$ is the Geographic Segment Exposure Score for country c .
- CR_c is the Current Regulation Score for country c .
- FR_c is the Future Regulation Score for country c .

The Current Regulation Score and Future Regulation Score are based on a detailed qualitative assessment of the regulation landscape for chemical safety in the country. They are scored on a 0-10 scale, with 10 corresponding to the highest risk and 0 corresponding to the lowest risk.

The Current Regulation Score is assessed by analyzing the state of existing chemical safety regulation in the country. The criteria used for analysis are as follows:

1. Maintenance of a national inventory of hazardous chemicals.
2. Assessment of the degree of restriction on chemicals.
3. Implementation of toxicity testing and reporting requirements.

4. Scope of chemical registration and reporting, assessed based on notification requirements for chemicals and volume limits for notification.
5. Presence of voluntary reporting requirements.
6. Implementation of external commitments such as the Stockholm Convention and the Globally Harmonized System of Classification and Labelling of Chemicals.
7. Consumer awareness of hazardous chemicals in the country.

The Future Regulation Score is assessed by examining the scope of upcoming regulations or any significant updates to existing regulations in the country.

Data Sources

The following sources are used to determine the Chemical Safety Exposure Score:

Danish Working Environment Authority, International Chemical Secretariat Substitute It Now List, Refinitiv, MSCI ESG Research, company disclosures.

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