Portfolio characterization methodology

Dow has a long history of understanding our products' hazards and ensuring they are safe in use while working to continuously improve. As part of this journey, we characterized our portfolio so we can prioritize actions.

The characterization criteria outlined in this document does not reflect the relative safety or risk of our products, but rather reflects societal and regulatory pressure on hazardous chemistry and offers a means of prioritizing innovation or improvement actions.

Our characterization approach

Dow's characterization approach is split into two phases. In the first phase, each Dow product is assigned a Safer Materials category (C-, C, B, B*) based on its hazard and exposure potential. Additionally, the presence of other substances of concern to regulators or customers, which currently may not be classified as hazardous but which Dow is still tracking, are also flagged.

In the second phase, a set of criteria is used to characterize eligible products with an A or A+ designation. These products must not contain hazards above cut-off levels, should be well-characterized in terms of available hazard data on constituents, and, in the case of A+, must demonstrate benefits or improvements, for example, replacement of a highly hazardous constituent with a lower hazard one.

Hazard input

In looking at hazards, Dow uses the Globally Harmonized System (GHS) of Classification and Labelling for products and substances. Hazards are assigned different priority levels.

- Priority 1: hazards of highest concern which tend to trigger regulatory measures (i.e., restrictions or bans).
- Priority 2: hazards considered serious but typically associated with less concern.
- Priority 3: hazards not designated as Priority 1 or 2.
- Priority 4: products not containing any known hazards.

This approach aligns with the Portfolio Sustainability Assessment methodology by the World Business Council for Sustainable Development, which represents an internationally agreed approach to rank hazard categories into different levels of severity or concern.

Table 1 contains the different hazard classes assigned to Priorities 1 and 2. The hazard assessment is performed using the 'lowest common denominator' approach. For example, if something is classified as carcinogenic class 2 in Europe, but not in the United States, it would be assigned to the Priority 2 group.

Table 1: Priority 1 and 2 hazards

Priority 1	Priority 2	
Carcinogen Category 1 Mutagen Category 1 and 2 Reproductive toxicant Category 1 Endocrine disruptor (HH) Category 1* Respiratory sensitiser 1	Carcinogen Category 2 Reproductive toxicant Category 2 Endocrine disruptor (HH) Category 2* Skin sensitiser 1 STOT SE 1 and 2 and STOT RE 1 and 2	HUMAN HEALTH
Persistent bioaccumulative and toxic (PBT) * very Persistent and very Bio-accumulative (vPvB)* Ozone depleting substance* Persistent, mobile and toxic (PMT)* very Persistent, mobile and toxic (vPvM)* Endocrine Disruptor (ENV) Category 1*	Aquatic Acute 1 Aquatic Chronic 1* Aquatic Chronic 2 Endocrine Disruptor (ENV) Category 2*	ENVIRONMENT

Exposure input

Each use of a product is assigned to an exposure category of low, medium-low, medium, or high. The assignment of an exposure category is based on the end-use application of the Dow product and default exposure category assignments have been set based on whether the use is in an intermediate, industrial, professional or consumer application. These are shown in table 2 below.

Sensitive end-use is factored into the assessment. For example, if a Dow product is used to make food-contact packaging, the exposure level would be flagged as Industrial + Sensitive end-use.

However, if it can be confirmed that the Dow product will not be used in such a way that it would have direct sensitive exposure, then the sensitive end-use label is not included. For example, if it is reacted away in an intermediate chemical process, the exposure level would be flagged as Industrial.

The use information is converted into a score to generate the Safer Materials Category.

Table 2: Default Exposure category assignments and Exposure scores

Use	Sensitive end-use	Default exposure	Score
Intermediate	No	Low	1
	Yes	High	4+
Industrial	No	Medium-Low	2
	Yes	High	4+
Professional	No	Medium	3
	Yes	High	4+
Consumer	No	High	4
	Yes	High	4+

Bringing it all together: The hazard/use matrix

This matrix shows how the exposure and hazard information is used together to assign the Safer Materials Category.

		Exposure Element Ranking			
	Class	Low	Med-Low	Medium	High
	Score	1	2	3	4
Hazard score "Priority"	4	B*	B*	B*	B*
	3	B	B	B	B
	2	B	B	C	C
	1	B	C	C-	C-

Categorization completion

The Safer Material Category has been generated for each product in the Dow portfolio considering each potential exposure type. For now, this portfolio characterization will be used internally to guide decisions. Products in the B and B* categories are eligible for sustainability tagging and a subset of these will later be categorized as A or A+. While Dow may act on products that fall into the C- category, based on this designation these products are not considered a risk to health or the environment.

To learn more about how Dow manages the characterization of products and their risk management, please see our Product Safety Blueprint online at Dow.inc/PSB.

To connect with a Dow representative, use the contact information available at: corporate.dow.com/en-us/contact.html.

*Denotes a hazardous property that currently does not have a GHS classification. Not all Priority 1 and 2 hazard information is associated with GHS classification, but these labels are still associated with negative sentiment and restrictions, such as the EU Substance of Very High Concern list or the UN Persistent Organic Pollutant list. Dow is therefore tracking these additional hazardous properties, and reflecting products containing them in their relevant categories.

910-00156-01-0624-DOW