



Product Stewardship

PETRONAS Chemicals Group Berhad (PCG)

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The PETRONAS Group adopts zero tolerance against all forms of bribery and corruption. We abide by the PETRONAS Code of Conduct and Business Ethics (CoBE) & Anti-Bribery and Corruption (ABC) Manual, guided by our Shared Values and Statement of Purpose.

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Product Design Criteria

1. Raw Material

PETRONAS has implemented a robust raw material compliance program which was adopted by PCG, called RAWMIR (Raw Material Information Request) through a platform known as e-CHEMS

A detailed instrument of assessment was developed to be forwarded to identified suppliers requiring them to furnish information related to composition, regulatory, presence of heavy metals and hazardous substances and on conflict mineral for all PCG existing raw materials and new materials introduced.

The overall strategy has benefitted in the following ways:

- A consistent process for obtaining and evaluating raw material HSE information prior to its introduction into PETRONAS product manufacturing
- A process for obtaining necessary HSE information to develop compliance documents for products
- focused on improving the environmental profile of product development by improving the biodegradability of formulas, reducing water footprint, which represents the product's impact on the aquatic environment
- to close all existing data gaps for physical, (Eco) Toxicological and regulatory
- early identification of very hazardous substances, and substances of concern-(SVHC, SOC)
- To avoid testing and cost for registration and notifications of substance with inventories
- Enabled selection of materials for new product development without any hazardous material and using naturally resourced

Product Design Criteria

Choice of raw materials or components that have a lower environmental footprint (e.g., reduced water/energy/material use, increase in renewable raw materials, reduction of hazardous substances and toxic materials)

For materials identified to contain hazardous substances e.g., SVHC, PETRONAS Chemicals is developing a long -term program to manage risks by substituting or phase out by suitably finding alternatives. This is as part of drive to promote the responsible production and safe use and handling of the PETRONAS products.

As part of RAWMIR process, we have also completed due diligence on all raw material procured indicating that in manufacture of our products, we do not distinctly use any of the minerals mentioned in “Section 1502” and EU Regulation (EU) 2017/821 on Conflict Mineral such as gold, tantalum, tin and tungsten as part of our raw materials.

2. Direct operations, production & manufacturing

The aim of a sustainable production is to ensure that the production of PETRONAS products conserves resources, with lower GHG emission, preserves the regenerative capacity of the environment and to increase customer satisfaction while increasing efficiencies and profits.

Product Design Criteria

3. Distribution, storage and transportation

Our commitment to sustainability helps us to decrease our environmental impact across the entire supply value chain. We incorporate environmental considerations in a variety of areas, from distribution, storage operations, product packaging and sustainable transportation solution with its objectives of universal access, enhanced safety, reduced environmental and climate impact, improved resilience, and greater efficiency.

4. Use phase - operation and servicing/ maintenance

We also embrace sustainability goals and challenges in servicing and maintenance by emphasizing the role of digitalization which enables the modernization of service management to address the complete client experience across all layers of the service delivery, from infrastructure through business transactions, by leveraging the capabilities provided through real- time data and event-based processing and automation.

5. End of life management

PCG seeks to minimize the environmental impacts of our products throughout their entire life cycle. We understand that our responsibility a steward of the environment does not end with facilitating the safe reuse, recycling, and disposal of our products but looking into Sustainable product and material end-of-life management which includes recovery of the product for re-use, recycling of the material content and responsible disposal.

Life Cycle Assessment (LCA)

- We continued to drive and embed Life Cycle Thinking across our businesses and operations, as well as for new projects and product development. The LCA approach was also used to quantify and prioritize the usage of low environmental impact raw material formulations, including formulating products with lower carbon footprint.
- We conduct cradle-to-gate assessments, beginning from resource extraction (cradle) to the factory gate (before it is transported to the consumer). This approach is aligned with our integrated value chain, ranging from extraction to downstream product completion.
- We conducted detailed LCA studies to accurately establish the product carbon and water footprint, as well as impact across various other health and environment impact categories.
- We also conduct detailed review of product LCA with process and product application experts to identify opportunities to reduce these impacts, especially its carbon footprint.
- To date, we have completed LCA assessments for 100% of key PCG products for Malaysia operations per our goal of completing these by 2023.

Product Risk Assessment

- PCG conducts Product Risk Assessment (PRA) in accordance to the methodology prescribed by the International Council of Chemical Associations (ICCA). PRAs are intended to provide relevant information of hazards and risks of chemical products being developed and the adequacy of risk mitigation measures proposed.
- To date, PCG has completed detailed risk assessment for 100% of all prioritized risk products (Priority 1, Priority 2 and Priority 3). Per ICCA guidelines, detailed risk assessments are not applicable for Priority 4 products.
- In conducting product risk assessment, all products are subjected to a preliminary risk assessment approach to categorize their risk priority based on the hazards and exposure to human health and the environment based on risk criteria described in PETRONAS Technical Standards (PTS) on Chemical Management. Based on the products hazard and exposure category, each product will be assigned with a risk rating calculated as follows:

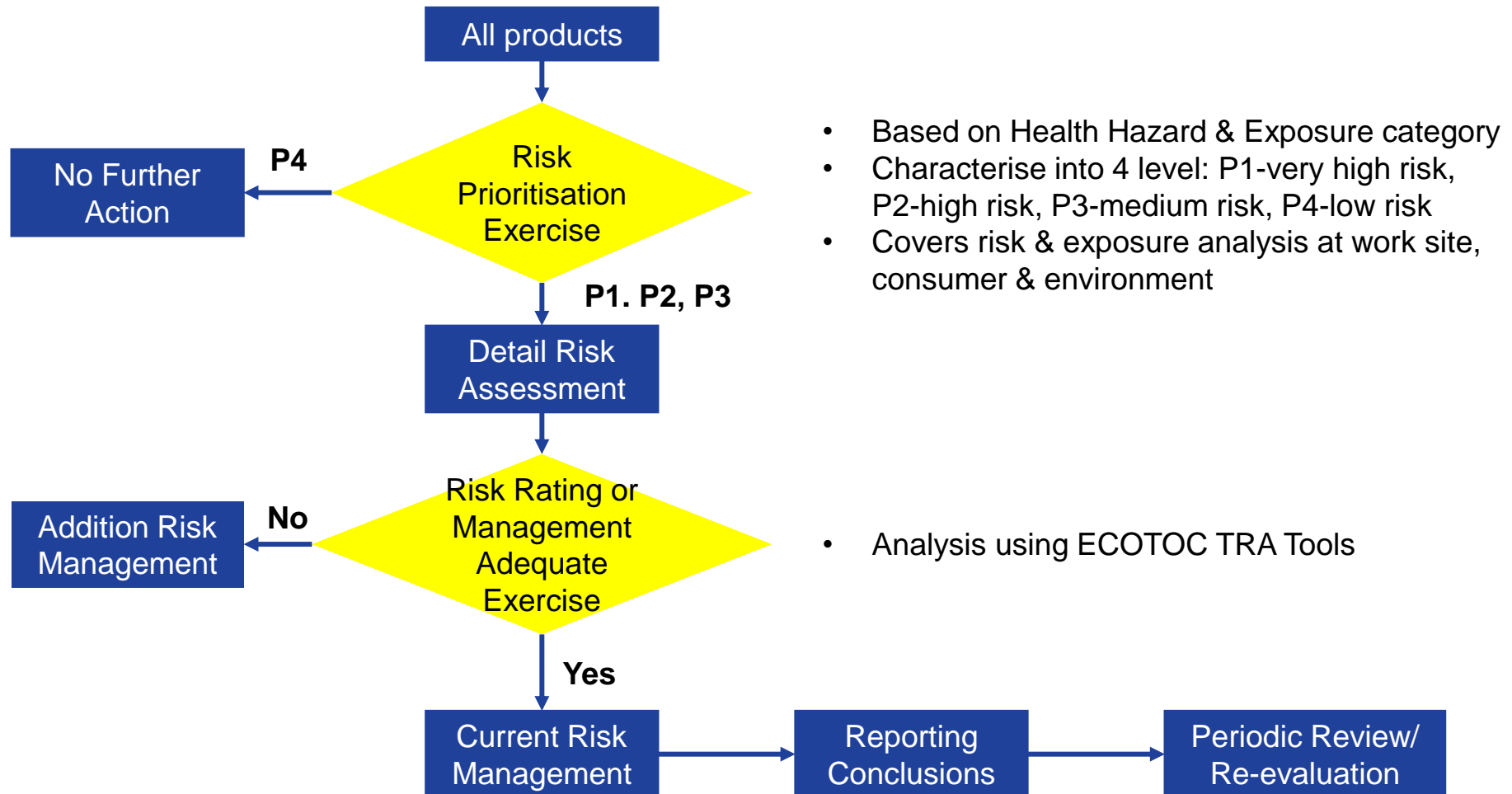
Priority 1 (P1) – Very high risk
Priority 2 (P2) – High risk
Priority 3 (P3) – Medium risk
Priority 4 (P4) – Low risk

Product Risk Assessment

- Detailed risk assessments are conducted for products with risk priority P1, P2 and P3 using ECETOC's Targeted Risk Assessment (TRA) tool, which calculates the risk of exposure from chemicals to workers, consumers and the environment. The ECETOC's TRA tool is the preferred approach by European Commission's Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) for evaluating consumer and worker health risks (<https://www.ecetoc.org/tools/tra-main/>).
- Global Product Strategy (GPS) safety summaries are developed for products that have completed detail risk assessments to facilitate accurate and transparent communication of their risk and safety precautions to key stakeholders. These GPS safety summaries are published in the public domain at ICCA portal and PETRONAS SDS portal (<https://sds.petronas.com.my/>)

Product Risk Assessment

- The flow for Product risk assessment at PCG is summarized as below.



Hazardous Substances Commitment

- In order to reach the long-term ambition of becoming Finite Material Neutral, Perstorp is setting 2030 sustainability targets for the areas with the largest impact. Targets have now been set for (eco) toxicity, which aims to safeguard both human health and the environment. The new targets are aligned with the EU's zero pollution ambition in the EU Chemicals Strategy for Sustainability Towards a Toxic-Free Environment, the EU's taxonomy regulation and they support the UN Sustainable Development Goals 3, 6 and 12.
- Perstorp has set the following (eco) toxic impact targets for 2030:
 - No chemicals of concern should reach the consumer or professional market
 - Newly developed products should be safe and sustainable by design

PETRONAS

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