



## Product Stewardship

### Why Is It Important?

Product stewardship is a vital aspect of ensuring that our products meet customer needs and sustainability considerations. When developing innovative products and solutions, we take a life cycle approach in meeting stakeholder expectations through minimising impact on health, safety and the environment throughout a product's entire life cycle.

Product stewardship in PETRONAS comprises a range of cross-functional disciplines, including product safety and regulatory compliance, toxicology, ecotoxicology, environmental health, product sustainability and life cycle assessment. We also collaborate with stakeholders across extended product supply chains, going beyond compliance to improve our offerings, ensuring safer and sustainable products that are in line with customer preferences.

### What Is Our Approach?

We remain steadfast in our commitment to managing risks and enhancing the performance of our products across their entire life cycle. Our approach to Life Cycle Thinking ensures that we take comprehensive steps to systematically assess, control, and communicate product HSE risks. These elements are integrated into our operations, from R&D and raw material sourcing to manufacturing, distribution, product application, consumer use and disposal.

Product safety and risk assessments are regularly performed, updated when necessary and communicated in order to ensure we do our part in safeguarding the environment and enabling our products to have a positive social impact through responsible use and application. We conduct comprehensive raw material assessments and product Life Cycle Assessments (LCA) to add value to products by meeting emerging stakeholder expectations and managing future product risks effectively. These practices are embedded into our standards and systems to ensure robust and responsible governance processes are in place which enables continuous improvements to product stewardship performance.

In addition to ensuring efficient procedures and effective communication with our partners and customers, we leverage digital and toxicology laboratory technology to safeguard our product compliance (licence to operate) in new markets, build customer loyalty and drive technical competency. Our commitment to managing product risks and enhancing performance is integral to our continued success.

#### Guided by international principles, frameworks and standards

- United Nation's Globally Harmonised System of Classification and Labelling of Chemicals.
- Organisation for Economic Co-operation and Development (OECD) Guideline for the Testing of Chemicals.
- ISO 14040/44 Environmental Management – Life Cycle Assessment.

# Positive Social Impact

## Key Highlights of 2022

### Product Stewardship and Toxicology

#### 1 Operation Clean Sweep

Working closely with the Malaysian Plastics Manufacturers Association (MPMA), PETRONAS Chemical Polyethylene Sdn Bhd and PETRONAS Chemical LDPE Sdn Bhd officially registered our pledge under Operation Clean Sweep® (OCS) which is the global plastics industry initiative that aims to reduce polymer pellets, flake and powder loss to the environment. PETRONAS Chemicals Group Berhad (PCG) became the first OCS signatory in Malaysia, demonstrating our commitment to safeguard the environment in this important area by performing detailed onsite assessments and implementing solutions to prevent polymer loss to the environment. Recognising the importance of industry-wide participation, moving forward we endeavour to drive this important agenda by encouraging wider adoption of OCS within our polymer supply chain.

#### 2 Establishing PETRONAS' Maiden Toxicology Laboratory

We are establishing PETRONAS' first toxicology laboratory to support R&D of safer and sustainable chemicals. The laboratory will enable early screening of key health and environmental hazards of candidate chemicals at pre-prototype stage. This will provide a feedback loop for product design improvement to create less hazardous products and minimise impact on the environment and human health. The laboratory emphasises non-animal test methods to ensure wider regulatory compliance as well as future regulatory preparedness.



#### 3 Ecotoxicology Assessments

We continuously assess the environmental performance of our products to promote the use of safer and sustainable chemicals. Data from internationally accepted and reliable ecological tests based on the Organisation for Economic Co-operation and Development (OECD) test guidelines were utilised to improve relevant product hazard profiles.

Produced water risk-based assessments continued to be conducted at our selected onshore terminals in order to address the ecological risk of discharged produced water on sensitive receptors in coastal and marine ecosystems.

#### 4 Strengthening Product Safety and Regulatory Compliance Governance

Operating internationally through integrated supply chains with a broad spectrum of products poses its own unique challenges. We place importance on product safety and regulatory compliance governance to ensure alignment with PETRONAS' overall objectives and aspirations. We have leveraged PETRONAS Group product stewardship situational assessments in order to:

- Identify areas of risk and enhance internal product stewardship standards with leading practices to ensure our products continue to be safe for intended use through evidence-based approaches.
- Identify areas for simplification and/or optimisation in managing our product regulatory compliance processes, as evident in the roll-out of a dedicated emergency response number to ensure any product-related emergency calls are professionally managed, with adequate coverage internationally.

#### 5 Raw Material Compliance


As part of our efforts to drive product safety and sustainability, product raw material assessments have been identified as a key lever. With the introduction of our Raw Material Information Request (RAWMIR) process, key product stewardship information regarding presence of Substance of Very High Concern (SVHC) and conflict minerals<sup>1</sup> have been curated for the majority of our products and specific cases for phase out or substitution have been initiated.

Due diligence on 250 raw materials used in PCG's products revealed that no conflict minerals were supplied to PETRONAS. Efforts are ongoing to complete conflict minerals due diligence across the wider Downstream and Upstream businesses.

The RAWMIR process was also extended to Oil Field Chemicals (OFCs) in order to obtain key environmental performance related to the Offshore Chemical Notification Scheme (OCNS). Data pertaining to aquatic toxicity of OFCs was obtained to enhance our efforts to reduce risk from produced water discharges.

#### 6 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 prioritise the usage of low environmental impact raw material formulations, including formulating products with lower carbon footprint. This allowed us to capitalise on new business opportunities and generate income for PETRONAS.



**36 LCA studies completed for products across Downstream and Gas businesses.**

We conducted a cradle-to-gate assessment, 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.

Engagements with relevant stakeholders were conducted to encourage knowledge sharing on the concept of LCA and gain the necessary information to develop life cycle inventory data. In the absence of suppliers' information, we leverage our experience in developing the PETRONAS LCA database.

<sup>1</sup> In politically unstable areas, conflict mineral trade can be used to finance armed groups, fuel forced labour and other human rights abuses, and support corruption and money laundering. Conflict minerals are tin, tungsten, tantalum and gold (refer to EU Regulation 2017/821).