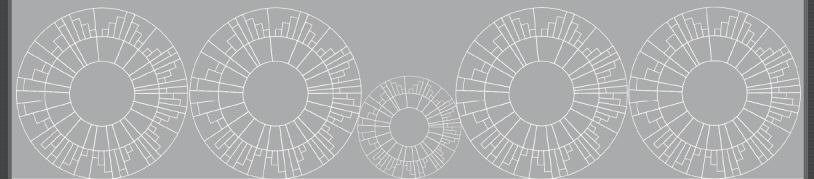


CASE STUDY

StemCell Technologies uses lifecycle conceptual mapping

Embedding
PROJECT

Life Cycle Thinking A GUIDE



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Product Lifecycle

STEMCELL's EMS takes a life cycle perspective, meaning environmental impact is considered at all stages of product development. To deepen our understanding of the environmental impact of our products, the EMS Executive Management Team set a goal for Fiscal Year 2024 to implement two initiatives to improve the sustainability of our products. The first initiative was to complete a life cycle assessment of select products and the second was to enhance the sustainability criteria used in new product development. The project objectives were to evaluate and document the most significant contributions to the products' carbon footprint across the value chain, identify actionable internal and external levers where we can make the greatest improvements, determine essential considerations to integrate into new product development, and propose longer-term recommendations for next steps in sustainable product design.

APPROACH

The project team defined selection criteria and evaluated four product "families" to choose a product and co-product for assessment and comparison. The life cycle map was defined as "from gate to grave," including the reception of raw materials, production process, customer use, and final disposal.

Following the Embedding Project Life Cycle Thinking³³ guidelines, the project team mapped the environmental impacts of a STEMCELL product from conception through disposal. We then divided work by life cycle stage to



³³ <https://embeddingproject.org/pub/resources/EP-Life-Cycle-Thinking.pdf>

quantify the impact of select environmental aspects, including water use, CO₂e emissions, and waste. To quantify the carbon footprint, the project team followed ISO 14044 guidance³⁴ and used recommended emissions factors databases where possible. The team then reviewed the findings, both by stage and in aggregate, and discussed possible interventions, including near-term recommendations and longer-term ideas and suggestions.

RECOMMENDATIONS

Based on the results of the life cycle maps and limited analyses, the project team proposed ten practical considerations for incorporation into the new product proposal process. These considerations build upon or will replace existing environmental considerations and will be integrated into the design process in the first half of Fiscal Year 2025. The project team also offered nine longer-term recommendations for sustainable product development to guide further discussions on the future of product sustainability at STEMCELL.

Life Cycle Limited Assessment: System Boundary

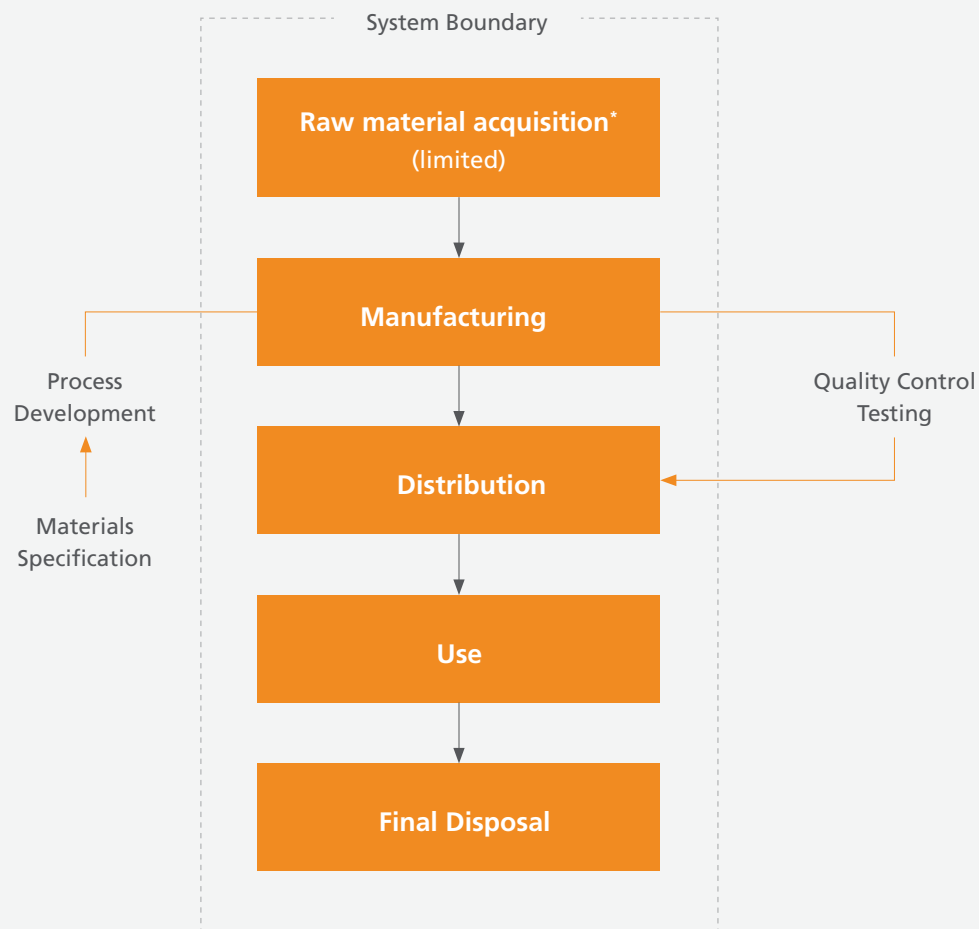


Figure 11. The system boundary of the life cycle limited assessment was “from gate to grave,” meaning we included in-scope environmental impacts from the reception of raw materials through final disposal. Although it occurs after manufacturing and before distribution, we included quality control testing data during the customer use stage due to the similarities in material inputs and outputs, thus excluding it as a unique process stage.

³⁴ <https://www.iso.org/standard/38498.html>