Sustainable Fire Retardants for Wood: Bridging the Gap Between Safety and Sustainability

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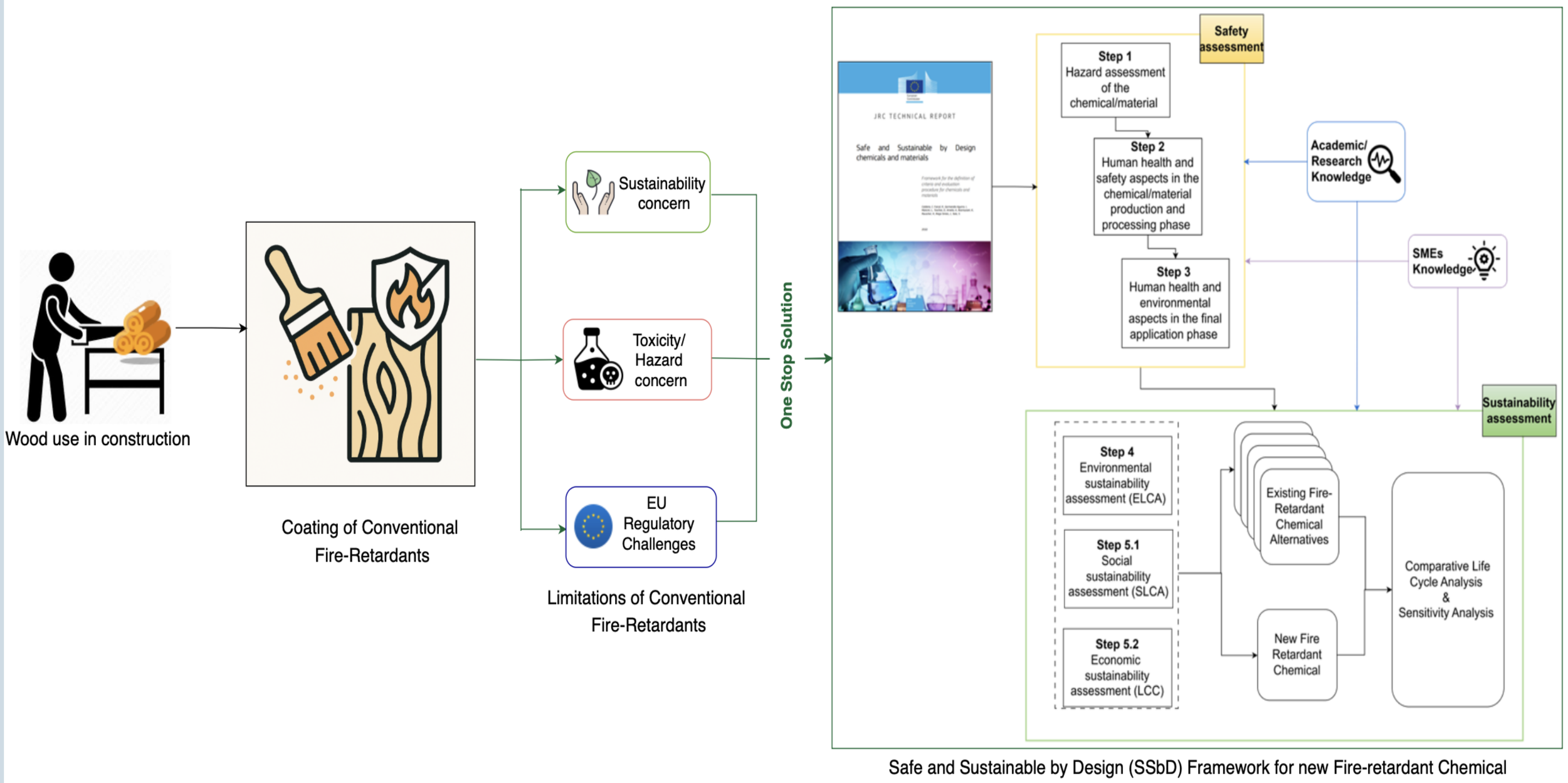

Safe and Sustainable by Design (SSbD) Framework for new Fire-retardant Chemical

Introduction

Wood-based products play a crucial role in the economies of Latvia and Estonia, contributing significantly to GDP. As a renewable, easily processable, and high-strength material, wood is increasingly promoted as a sustainable option in construction.

However, its natural flammability is a major safety concern. Traditional fire-retardant treatments, although effective, often contain toxic components that pose risks to human health and the environment and may not comply with stringent EU regulations.

The paper critically examines the limitations of conventional fire-retardants, including their toxicological concerns, persistence in the environment, and compliance challenges with EU regulations.

Methodology

This review follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) methodology, ensuring systematic and transparent selection of studies. This approach allows for a comprehensive analysis of fire-retardant chemicals used in wood products.

Results

The review identified major limitations of conventional fire retardants, including toxicity, poor biodegradability, and non-compliance with EU regulations. By applying the Safe and Sustainable by Design (SSbD) framework, safer and more eco-friendly alternatives were highlighted. SSbD helps align fire performance with health and environmental safety, supporting a shift toward greener solutions in the wood industry.

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FIRESTOP Eco-Friendly Fire Retardant for wood