Many building and construction products (e.g. paints or sealants) are chemical-intensive and some of the chemicals used can cause harm to human health or the environment throughout the life cycle of building products.

Harmful chemicals in building products can hinder circular economy processes, such as recycling or reuse of materials and prevent progress towards circularity in the building and construction sector.

With an end market size of approx. 8 trillion USD in 2011, building and construction is one of the most chemical-intensive sectors downstream of the chemical industry and, driven by rapid urbanization, the sector is expected to further grow.

WHY ARE CHEMICALS AN IMPORTANT ISSUE FOR BUILDING PRODUCTS?

- Many building and construction products (e.g. paints or sealants) are chemical-intensive and some of the chemicals used can cause harm to human health or the environment throughout the life cycle of building products.
- Harmful chemicals in building products can hinder circular economy processes, such as recycling or reuse of materials and prevent progress towards circularity in the building and construction sector.
- With an end market size of approx. 8 trillion USD in 2011, building and construction is one of the most chemical-intensive sectors downstream of the chemical industry and, driven by rapid urbanization, the sector is expected to further grow.

OPPORTUNITIES AND NEED FOR VALUE-CHAIN APPROACH TO ADDRESS CHEMICALS OF CONCERN IN BUILDING PRODUCTS

- A collaborative approach is needed that involves all actors and stages of the value chain. This includes architects, engineers, product designers, investors, construction and demolition workers, regulators and civil society representatives.
- Action must combine addressing hazardous legacy chemicals with innovations in chemistry and material sciences, design practices and targeted regulation to avoid future hazardous construction wastes.

Recommendations for Approaches and Actions

**INCREASE TRANSPARENCY ON CHEMICAL USE**
- Develop systems ensuring the flow of information on chemicals in building products along the entire life cycle, to appropriately inform all relevant actors, maximize the potential for circularity and to ensure environmentally sound disposal of wastes where needed.

**TAKE TARGETED REGULATORY ACTION**
- Strengthen regulatory action to identify, assess and address chemicals of concern in building products.
- Consider a precautionary approach in situations where evidence for concern is emerging, or data gaps on hazard and potential impacts exist.
- Ensure adequate training and protection of all actors along the product life cycle, especially where substitution of chemicals of concern in building products is technically not feasible.

**DESIGN FOR CIRCULARITY**
- In design of new products, ensure that chemical barriers to circularity are minimized and material can retain their highest possible value throughout their lifecycle.
- Include assessment of chemical impacts along the life cycle in design of building products.
- Use green and sustainable chemistry innovation to develop benign chemicals and materials.
- Extend the concept of designing for circularity to the level of building projects, including material and product choice and development of new construction and deconstruction methods.

**MINIMIZE IMPACTS OF LEGACY CHEMICALS AND DEVELOP NEW TECHNOLOGIES FOR RECYCLING**
- Ensure the environmentally sound management of construction and demolition waste containing chemicals of concern.
- Advance technologies for the sound recycling of building products containing chemicals of concern.
The life cycle of building products

- The service life of building products can be very long during which, a variety of different actors, e.g. construction workers, inhabitants or demolition workers, may use or come into contact with building products.
- Chemicals of concern in building products can impact human health or the environment at all stages of the life cycle. It is also possible that impacts occur only at certain stages of the life cycle but not in others.
- The long service life of building products can lead to the accumulation of large stocks of (legacy) chemicals of concern in the built environment.

- At their end-of-life, building products containing chemicals of concern may fulfil the criteria for being considered hazardous wastes and require environmentally sound disposal to protect human health and the environment from pollution.

Remaining challenges and gaps

- Information on use and concentration levels of chemicals of concern in building products often is scarce.
- Information on chemicals of concern in building products available in the public domain often reflects the context of their application in developed countries and might not fully reflect the situation in developing countries and countries with economies in transition.
- Information on materials and chemical composition that may be available at manufacture / installation of a product often is lost by the time the product reaches its end-of-life stage.
- Methodologies to integrate chemical risk into the broader sustainability assessments are scarce. This makes identification of potential conflicts with other sustainability agendas (e.g. climate impacts) challenging.
- There may be a considerable number of chemicals relevant for the building and construction sector, for which evidence for concern is emerging.