Introduce yourself (name, job title, organization and country) in the chat section.

Only the presenter and facilitator will speak. Any comments or questions from attendees should be typed in the chat section.

Please kindly keep you microphone muted and cameras off during the discussion

NOTE:
If you are having technical issues, please join the Chemicals in Products WhatsApp group, using this link, and we will assist you:
https://chat.whatsapp.com/DVwGix7x04d1Q9b5usaJcr

Discussion 2:

Topic: Chemicals of concern in building materials

Date: 15th April 2021

- Time: 14h00 – 15h30 (GMT+2)
- Presenter: Amelie Ritscher, UNEP consultant; Oleg Dikovskiy, ISC3; Stewart Muir, Bioregional
- Facilitator: Andrea Rother, University of Cape Town
- Chair: Maxine Brassell, MPH student, University of Cape Town
Let us know where you are from.

Drop a pin on the world map in the next slide to let us know which country you are from.
Discussion 2: Chemicals of concern in building materials

**PRESENTERS**

Amélie Ritscher  
UNEP Consultant and analyst on chemicals in products

Oleg Ditkovskiy  
ISC3 project manager on sustainable chemistry, renewable energies and PtX-technologies

Stewart Muir  
Bioregional project manager on sustainability of consumer products, appliances and building materials.
Introduction:
Presented by: Amelie Ritscher, UNEP consultant

- Urbanization taking place at historically unprecedented scale
- By 2050 an additional 2.5 billion people will move to cities where 66% of the global population will live
- Global construction sector expected to grow by 3.5 annually between 2018 and 2023
- Within coming 40 years: 230 bn m² additional floor area will be built
Global Chemicals Outlook II

• Building and construction large end-market for chemical industry

• Very diverse set of products – many of which are chemical-intensive

• Many opportunities to advance on issue of chemicals of concern and to increase sectors sustainability and circularity

Table 3.4 End markets for chemicals (adjusted based on Global Manufacturing Industry group, 2011, p. 18)

<table>
<thead>
<tr>
<th>End market size and chemical revenue from end market</th>
<th>Megatrends likely to have the most significant impact</th>
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<tr>
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<td>Resource scarcity</td>
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<td>Construction</td>
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<td>Agriculture</td>
<td>142</td>
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<td>Paper and packaging</td>
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<td>Nutrition</td>
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<td>Machinery</td>
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<tr>
<td>Apparel and textiles</td>
<td>11</td>
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<tr>
<td>Mining and metals</td>
<td>4</td>
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</tbody>
</table>
GEF Project: Global best practices on emerging chemical policy issues of concern under SAICM

Increase ambition of governments and value chain actors in the building products, toys and electronics sectors to track and manage chemicals of concern in their products

- New tools and guidance to reduce use of chemicals of concern
- Training and support for government and value chain actors to trial and adopt new guidance & tools
- Knowledge management and collaborative information sharing amongst broad group of SAICM stakeholders and beyond

- Overview report on chemicals of concern in products of the building and construction sector
- Sector-specific guidance document, complementing UNEP's global eco-innovation manual
• Exchange on information resources on chemicals of concern in building products

• Discuss challenges related to plastic building materials

• Share innovations that can help phasing out chemicals of concern in building products and support circularity of the sector
Background to Question 1:  
Presented by: Amelie Ritscher

- Based on initial findings of UNEP report on chemicals of concern in the building and construction sector
Life cycle of building products

1. Raw material extraction & feedstock manufacturing
2. Product design & manufacture
3. Product logistics
4. Installation
5. Building construction
6. Building use / operation
7. Refurbishing
8. Building demolition
9. Product end-of-life
10. Reuse & recycle
11. Disposal

Long time scales and product lifetimes
Examples of impacts along product life cycle

- Raw material extraction & feedstock manufacturing
- Product design & manufacture
- Reuse & recycle
- Disposal
  - Leaching of heavy metals from treated wood
- Product end-of-life
  - Exposure of workers to asbestos
  - Releases of PCB in dust from sanding down of protective coatings
  - Exposure of construction workers to unreacted isocyanates in PU-spray foam applications
- Refurbishing
  - Exposure of workers to flame retardants in insulation materials
  - Exposure of inhabitants to VOC in paints
- Building demolition
- Building use/operation
- Installation
  - Building construction

Source: UNEP draft report on Chemicals of Concern in the Building and Construction Sector
Addressing chemicals upstream

Source: UNEP draft report on Chemicals of Concern in the Building and Construction Sector
Question 1:

- Are aspects on chemicals of concern or material composition considered during the design phase of buildings, e.g. by architects during planning and/or the design phase of building products?
- In your country, how can actors from the building and construction sector (designers, architects, construction companies, construction & demolition waste handlers) find information on chemicals of concern in building products?
- If chemicals of concern are not considered in the planning phase, what is hindering this process?

This question will be discussed for 25 minutes.
Please use chat only, mute your microphone, and turn your video off.
Thank you!

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In your country, how are chemicals of concern addressed by the building and construction sector currently?

- Here in Colombia we have some regulations related to chemicals concentrations that include some CoC (not all) for example, asbestos is forbidden.

- In Europe, there are REACH, ROHs that cover some of them.

- Not made clear to the primary consumer.

- In Sierra Leone, the building and construction sector does not pay any attention to this most specially being a new phenomenon.

- Majority of large companies are using Basta to work with phase out of chemicals of concern.

- Voluntary systems within industry and pressure from those commissioning the building.

- REACH ensures the finished product does not contain restricted substances, but best practice lacks drivers in the UK. It will be interesting to see how this changes post-Brexit as well.

- In Finland, chemicals of concern in construction sector are regulated by EU REACH regulations, controlled by several authorities incl. municipal building control authority.
In your country, how are chemicals of concern addressed by the building and construction sector currently?

- They are mostly not aware of the chemicals of concern as this training is not given to architects and engineers.
- Through firstly identifying the type of chemical, then through some regulatory decisions.
- Armenia: regulation of Eurasian Economic Commission on the safety of buildings and structures, building materials and products.

In general, chemicals of concern are not really considered in The Gambia as there is no regulatory infrastructure regulating chemicals in construction materials apart from the banning of Asbestos as roofing materials. Awareness is also lacking.
Are there currently any voluntary initiatives coming from the construction sector in your country (e.g. building certifications)?

- Not aware
- No
- LEED, SELLO CASA COLOMBIA, EDGE
- Building rating tools like BREAAM are fairly widespread in the UK, and Bioregional's One Planet Living framework has been embedded by progressive builders - eg Greencore/Sassy property's Springfield meadows development
- Not sure
- in the EU: initiatives like passive houses promoting e.g. insulation materials and saving energy and emissions
- There is a move toward green building initiatives to link to the green economy
- In Sierra Leone building permits are issued to allow the construction. This does not cover anything on chemicals of concern. No matter
- It is a long time that there is a building certificate in Iran and without it it is impossible to start a building
Are there currently any voluntary initiatives coming from the construction sector in your country (e.g. building certifications)?

- Yes eco label Svanen in Sweden for houses and products
- Yes, here in Colombia we have national and international certifications 'Leed', 'Edge' and 'Casa Colombia'
Background to Question 2
Presented by: Oleg Ditkovskiy, ISC3
ISC$_3$ workstream 2019-2020

Sustainable Building & Living - Focus on Plastics

April 15$^{th}$, 2021

Oleg Ditkovskiy, Workstream Manager, Science & Innovation, ISC$_3$
Plastics in Building
Increase of plastics in building for decades

**Plastics and chemicals production:**
- ca. 20% of plastics for construction (Plastics Europe 2020)
- ca. 9% of chemicals for construction worldwide (Global Market Insights 2017)

**Construction sector + global megatrends:**
- Demography & Urbanisation
- Resilience & Climate Change
- Human Health & Environment
- Affordable Housing
- Energy & Natural Resources
- Carbon Emissions and Waste
Challenges & Chances

- Decades of linear, toxic and wasteful production and practices

- No „One-Fits-for-All“- Solution (due to socio-economic & technical conditions, regulations, climate and resources)
- Deconstruction instead of demolition
- Design for separation & recycling, LCA in design & planning phase → Circular Economy
- Creating markets for waste
- new recycling technologies (better quality) & processing methods for residuals (e.g. CreaSolv®)
- Restriction and substitution of harmful additives to non-regrettable alternatives (technically available)
- Information + documentation
Report to download:

Thank you for your attention!
Question 2:

a) What kind of building materials are commonly used in your country and how are they controlled? (minerals, local renewable materials like bamboo, timber, waste materials)

b) What are effective ways to ensure there are no CoC in building material?

c) Does plastic waste play any role in your country or region?
   • What happens to waste materials after the building life-cycle?
   • Are there practices for separation of plastic waste?
   • Is it used as building materials?
   • Can it be recycled?
   • Is there a market for plastic waste?

This question will be discussed for 25 minutes.
Please use chat only, mute your microphone, and turn your video off.
Thank you!

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What are Chemicals of Concern in plastics that need to be substituted in your country?

- **EU**: the most flame retardants (due to the smoke toxicity in case of fire)
- **BPA (Plastics and Endocrine Disrupting Chemicals)**, phthalate, brominated flame retardants.
- **Lead**, formaldehyde, BFRs, HBCD, phthalates, Perfluorinated compounds, phenol
- **Phthalates**: PVC containing phthalates is widespread. Alternatives like linoleum or cork are not as common
- **In Sierra Leone**: chemicals of concern in plastics that need to be substituted are dioxins and furans
- **In South Africa**: we have no way of knowing what chemicals are in our plastics which may be CMRs.
- **Unfortunately**: PVCs are still present in plastics products in Latin America.
- **In South Africa**, there could be anything in our plastics...
Is plastic waste regulated in any way in your country?

- Yes: 5
- No: 1
- I don't know: 2
Are you aware of safe alternatives to chemicals of concern in plastics for construction?
Background to Question 3:
Presented by: Stewart Muir, Bioregional

- UNEP Eco-innovation manual – Building Materials Supplement
- Aimed at SMEs, the development and application of a business model, shaped by a new business strategy, that incorporates sustainability throughout all business operations
- Must begin with change in business strategy
- Based on lifecycle thinking, taking a whole value chain approach
- Consideration all sustainability elements: Economic, social and environmental
Sustainable business strategies and models

Business model ‘patterns’ (Osterwalder & Pigneur)

1. Circular supplies
2. Resource recovery
3. Product life extension
4. Sharing platforms
5. Products as a service
6. Multi-sided platform
Sustainable business models

Product as a service model - lighting
- Recovery of electronic components and rare earths
- Better end of life treatment of fluorescent tubes
- Performance monitoring
- Flexibility to the user’s needs
- What else could this model be applied to?

Circular supplies
- Repurposing waste and by-products from other value chains
- Lower impact material
- Recoverable at the end of life
- Modularity within other product systems

Egg Lighting, UK

Gjenge Makers, Kenya

Adaptavate, UK
Sharing platforms, resource recovery and circular buildings

USE-IT, South Africa

USE-IT Non-Profit Organisation

ETHEKWINI WASTE MATERIALS RECOVERY INDUSTRY DEVELOPMENT CLUSTER

USE IT WASTE BENEFICIATION (Pty) Ltd is a Durban-based Section 12 Company that identifies waste-beneficiation opportunities in the eThekwini Municipal area that will help to divert waste from landfills and create employment in the green economy as well as provide a number of specialised services.

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Our Vision:

"To maximize waste diversion from landfills into waste-beneficiation projects that create a multiplier effect of positive benefits to the environment, the economy and the creation of jobs."

For our values and critical success factors follow this link

Recycled Products

As the effects of climate change are felt across the world and with the construction industry being one of the major contributors, both governments and individuals are beginning to take the effects of climate change more seriously. Here are some contact details of recycled building materials.

Building Materials:

Compressed Earth Bricks / Blocks:
This block system converts waste soils and rubble from landfill into building products for all types of buildings. The product has a very low carbon footprint compared to conventional materials, for more information contact us.

Site location: Gills Orange Business Park, Mitchells Plain, Durban

Roof Tiles - Plasttrade:
After many years of research and equipment design, sustainable products have been developed using recycled plastic waste with sand and applying heat and pressure, a range of viable products can be manufactured.

Rotor DC, Belgium

Rotor Deconstruction is a cooperative that organises the reuse of construction materials.

We dismantle, process and trade salvaged building components. Learn more.

A new method for reusing ceramic tiles

Up to 85% less impact than equivalent new tiles

[Chart showing comparison between new and reused ceramic floor tiles]
Chemical safety within reversible and modular building design

“Buildings designed with mechanical connections rather than chemical ones facilitate easy separation of components and materials without force, reducing contamination of materials and damage to components during Deconstruction”

Strategies for Applying the Circular Economy to Prefabricated Buildings, Minnuno et al
UNEP Eco-innovation Building Materials supplement

- Consultation on current draft
- Piloting with building materials SMEs in Sri Lanka with NCPC-Sri Lanka during 2021/22

Contact: Stewart Muir  
Project Manager – Sustainable Products  
Bioregional.com  
stewart.muir@bioregional.com
Question 3:

- Please share innovations in buildings material or in business models in the buildings sector, that is helping phasing out CoC (and supports circularity), from your countries and institutions.

- Have there been any related challenge in their implementation?

This question will be discussed for 25 minutes.
Please use chat only, mute your microphone, and turn your video off.
Thank you!

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Please provide any examples you know of where chemicals of concern have been successfully addressed through substitution or innovation.

Insulation materials made from residual biomass or secondary raw materials (jute, hemp mats), self-healing materials (polymer-based).

It is hard to get access to this information.

move to Chromium II from Chromium VI. Example of Savroc Triplehard as a new plating technique.

The main example in Colombia is asbestos. Regarding this material is forbidden in the construction sector needed to innovate in its substitution. Also old construction that have this material needs to be manage with care, such as norms establish.
How will the information discussed in today's session help you further in your work?

- Currently we are working on the formulation of a roadmap towards circularity in electronics sector; some results of today's session such as challenges and chances are perfect feedback to make some recommendations.
- The group discussion gives an overview about the different regions and the status quo there.
- It has challenged me to see how this information can be made more accessible to consumers who do not have access to the internet.

Great discussions and ideas shared today.
Did you find the resources sent out before the discussion useful?

Yes: 5
No: 0
Did you use the resources sent out before the discussion to prepare for this discussion?

- Yes: 4
- No: 1
How will you use the information and resources from today's discussion in your work?

Design a roadmap for electronics sector in LAC -including CoC- towards circularity
THANK YOU for attending the Chemicals in Products CoP Discussion

SAVE THE DATE:
CiP CoP Discussion 3
Date: 17th June 2021
Topic: Chemicals in Toys

All resources and summaries of previous CiP CoP discussions are available at the following link:
https://saicmknowledge.org/topic/community-practice

If you have not signed up to be a part of this CoP, please do so at the following link:
https://saicmknowledge.org/community

This activity is supported by the Global Environment Facility (GEF) project ID: 9771 on Global Best Practices on Emerging Chemical Policy Issues of Concern under the Strategic Approach to International Chemicals Management (SAICM).