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Occupational Health and Safety Act 1003
groundWork's Comments on Draft Regulations on Hazardous Chemical Agents

Hazardous chemicals exposure in everyday life has increasingly become a health concern globally, particularly as it affects the vulnerable people in society – women, children and unborn fetuses[1]. There is a growing international recognition that all countries need effective chemical safety laws and proper enforcement mechanisms is growing due to the increased medical understanding of the harms caused by toxic chemicals and the global expansion of chemical production and use[2].

A growing body of scientific research is raising the level of concern about the health impacts of chronic chemical exposures, because we know that:

- Even very small doses of chemicals can cause disease.[3]
- Children and developing babies are most vulnerable.[1]
- Hundreds of synthetic chemicals are found in human breast milk and in the cord blood of babies in the womb. See Body Burden: The Pollution in Newborns (pdf)
- Chemicals can act like drugs in our body, disrupting systems at low levels of exposure, and potentially causing harm in combination.

Section 2: Scope of application

It will be important for the regulation to take into consideration specific focus on healthcare industry due to the enormous amounts of cleaning chemicals been used for prevention of hospital acquired infections (HAIs). Many products used in health care can contribute to hazardous exposures, including cleaners and disinfectants, phthalates in medical devices, flame retardants in furniture and electronic equipment, formaldehyde in furniture, and solvents in labs, among many others.

Chemicals used in hospitals contribute to poor air quality and has been implicated in the increase of worker respiratory ailments such as asthma and reactive airway dysfunction syndrome (RADS)[4]. Furthermore, exposure to and contact with cleaning chemicals can also cause eye, nose and throat irritation, skin rashes, headaches, dizziness, nausea and sensitization.

In addition to cleaning chemicals, the healthcare industry is also overburdened with the responsibility of dealing with expired medications which often end up in our water bodies. In fact a recent article written by Sheree Bega in April 2018, explains further the implications of pharmaceuticals in South Africa's water bodies[5].

Pharmaceutical pollution poses dangers to ecosystems and human health globally: pharmaceuticals enter the environment at all stages of their life-cycle (production, use, and disposal), meaning they can end up in our drinking water as well as accumulate in vegetables and fish. There is scientific evidence that even low concentrations of pharmaceuticals have harmful effects on animals and plants, and may also affect humans, as attested by two reports published by Deloitte for the European Commission[6],[7]. In order to be effective, the active pharmaceutical ingredients (APIs) in drugs are designed to be biologically active and resistant to metabolic degradation, which means they persist and remain active in the environment as an unintended consequence.

APIs in the environment can cause reproductive failure, growth inhibition, and behavioural changes in organisms and even collapse populations. Several studies and documentaries have shown the devastating impacts of uncontrolled manufacturing discharges on water bodies, as well as on the people and animals who have come into contact with the resistant bacteria found in the environment [8]

Section 3: Information, Instruction and Training

Despite the clear links between pollution and health, this regulation seems inadequate to protect public and workers from hazardous chemicals because it does not allow for sufficient public access even to the limited chemical information provided by chemical manufacturers to the government.

For example, most chemicals used come with material safety data sheets which contains information on the potential hazards (health, fire, reactivity and environmental) and how to work safely with the chemical product. Unfortunately, this is where it ends for most chemical manufacturers as they ignore that chemicals are often mixed and this results in a completely different cocktail due to synergistic effects occurring that could be potentially hazardous. This means that the interaction of two or more of these chemicals produces a health effect greater than that of the individual chemical alone.[9]

Hospital environment scenario; there are different chemicals available for cleaning different parts of the hospitals – floors, ceilings and windows. These cleaning chemicals have different chemical agents and compositions. A cleaner not well trained may mix all three cleaning chemicals to reduce the workload of having to carry 3 different chemicals for cleaning. Once mixed, the cocktail formed is a totally different chemical which is not reflected in an MSDS. For example if you mix a quaternary ammonium compound with a bleach cleaner, a toxic gas called chloramine forms and is released into the air. Once airborne, hospital staff, patients and visitors are exposed to this toxic gas that can be harmful to their lungs. Quaternary ammonium compounds and bleach are often used for routine cleaning purposes and long term exposure results in asthma and hypersensitivity syndrome [10]

Therefore special attention must be paid to this area with emphasis on as more information as possible on possible mixtures and health implications of exposure.

Section 5,6,7,8
The regulations must also consider building standards as this affects exposure concentration of chemical agents. Inadequate ventilation, volume of air exchanges increases the concentration of chemicals indoor. For example, hospital buildings which are prone to extensive use of chemicals, must have adequate ventilation to allow fresh air intake to dilute these chemicals.

Personal Protective Equipment
Alternative chemical use methods should be recommended when using hazardous chemicals. The use of spray bottles, aerosols and mechanized equipment such as buffers and carpet washers increase airborne concentration of cleaning chemicals as particulate matter becomes aerosolized and in the breathing zone of operators [11]. Therefore, spray bottles should be replaced with pour and wipe techniques, while floor burnishers should have an enclosed system with a filter scrubber to capture chemical vapours and particulate matter. These changes will contribute to the reduction of aerosols concentration and their by products

Generally the following principles should be considered [12];

- Precaution: Precaution leads us to act when credible threats of harm exist, although some uncertainty may remain.
- Substitution: This principle leads us to eliminate or reduce the use of hazardous substances by substi-tuting less-hazardous substances, redesigning the product, or by using technological or organizational measures to achieve the same function, while main-taining cost-effectiveness and quality of care. Substi-tution requires an evaluation of inherent hazards, and is consistent with a hierarchy of controls approach to addressing occupational health hazards.
- Design for life and health: This principle leads us to drive the design of products up front to be least harmful and most just to workers, users and the envi-ronment throughout the life cycle of the product.
- Comprehensive producer responsibility: This principle asserts that the producer's responsibility for the environmental impact of its products starts with the extraction of the raw material and continues through manufacturing, product use, and the end of life or post-consumer stage of the product's life cycle, as well as chemical releases during these stages.
- Full Disclosure and Right to Know: This principle leads us to require full information on product con-tent and materials, and on the health and environ-mental impacts of the chemicals, products and mate-rials we use, and to provide that information to cus-tomers, workers, and the public.

· Accountability: This principle leads us to be transparent in our actions and to publicly report on prog-ress toward our goals. We also seek to hold vendors accountable for the information, products, and ser-vices they provide.
· Worker Involvement engages workers and exposed groups in preventive activities and evaluation of alternatives.
· Necessity: This principle leads us to carefully consider the necessity of the product and/or the services it provides and reduce use where possible.

Section 14. Classification of an HCA
Globally substances of very high concern (SVHCs) are progressively been identified based on their hazardous properties and are being replaced by less dangerous substances or technologies where technically and economically feasible alternatives are available.

Substances with the following hazard properties may be identified as SVHCs:

- Substances meeting the criteria for classification as carcinogenic, mutagenic or toxic for reproduction (CMR) category 1A or 1B in accordance with the CLP Regulation.

- Substances which are persistent, bio accumulative and toxic (PBT) or very persistent and very bio accumulative (vPvB) according to REACH Annex XIII.

- Substances on a case-by-case basis, that cause an equivalent level of concern as CMR or PBT/vPvB substances.

Elimination of hazard chemicals.

Hazard is an intrinsic property of a chemical, and the root cause of it can only be addressed by substituting a hazardous chemical for a less hazardous. A simple way forward is to ban/restrict chemicals that are already identified by others as hazardous. To facilitate trade and uniform standards in South Africa, and beyond, these bans/restrictions should preferably be international.

A new report by the WHO on "Circular Economy and Health: Opportunities and Risks"[1].

The report includes inter alia, compiles a number of case studies on health impacts of the circular economy. The case study on chemicals of concern in products highlights that "In principle, the circular economy should entail the avoidance or phasing out of specific materials such as toxic substances, where these damage human health or the environment or

[1] http://www.euro.who.int/en/publications/abstracts/circular-economy-and-health-opportunities-and-risks-2018

where recycling or reuse is more technically complex and expensive, unless there is a compelling socioeconomic case for continued use, such as that applied in the REACH Regulation. In reality, however, hazardous chemicals can cause problems in the implementation of circular economy processes, especially in recycling, reuse and remanufacturing, owing to:

(a) Long-lasting products containing chemicals that have been banned; -the contamination of feedstock in production processes, as it is more difficult to control feedstock quality for recycled material than virgin material;

(b) The presence of chemicals whose use in manufacturing within the EU is illegal but not restricted in imported articles;

(c) Insufficient understanding of the toxicity of many chemicals that may be still in use (CHEM Trust 2015)".

The report also provides three examples of chemicals of concern of relevance to circular economy processes (especially recycling, reuse and remanufacturing), including BPA, BFRs and polyvinyl chloride (PVC).

It is noted that "BPA was recently banned in thermal paper in the EU from 2020 under the REACH Regulation, classified as toxic for human reproduction (category 1B) under the CLP Regulation".

"Many flame-retardant chemicals have been identified as substances of concern for effects such us mutagenicity, endocrine disruption and carcinogenicity. In some products, such as furniture, people can be exposed to BFRs through not only direct contact but also dust released though use; there is particular risk to children, manufacturing workers and fire-fighters. Some evidence has been found of BFRs in toys (Chen et al., 2009)."

"PVC is a concern for recycling due to the presence of the softener diethylhexyl phthalate (DEHP) in some items such as footwear and floor coverings. This poses a reproductive toxicity threat to exposed workers. While the REACH Regulation bans DEHP, debate continues on EC proposals to authorize the recycling of plastics containing DEHP in new PVC products."

How transparency on hazardous chemicals can fulfill Agenda 2030 goals

with information on the chemicals used in the production of materials and products, and remnant concentrations in materials and products, precaution can be taken to act on following

SDG targets:

SDG 1, target 1:5
Justification: Transparency can help us reduce exposure to highly hazardous chemicals that may result in costly health impacts and deteriorated ecosystem services, undermining anti-poverty ambitions. This would lead to reduced exposure to environmental shocks, one of which is chemical pollution.

SDG 3, target 3:9
Justification: Transparency can help us avoid pollution of the environment, and unnecessary exposure to highly hazardous chemicals, thereby contributing to substantially reducing the number of deaths and illnesses from highly hazardous chemicals and air, water and soil pollution and contamination.

SDG 6, target 6:3
Justification: Transparency can help us avoid pollution of water bodies and the groundwater, ensuring that highly hazardous chemicals do not end up in drinking water.

SDG 8, target 8:8
Justification: Transparency can help us avoid unnecessary exposure to highly hazardous chemicals in the working environment, and facilitate substitution for less highly hazardous alternatives.

SDG 9, target 9:2
Justification: Transparency will facilitate substitutions of highly hazardous chemicals in production systems of materials and products, so that industries can become more sustainable.

SDG11, target 11:6
Justification: Transparency can promote a safe circular economy, so that more materials can be safely reused and recycled. This could reduce waste volumes, as well as improve the air quality in cities, as less waste would have to be burned, and less new materials produced and refined, and used for manufacturing of new products.

SDG 12, target 12:4
Justification: Transparency of chemicals in materials is at the core of sound management of chemicals throughout their life cycles.

SDG 14, target 14:1
Justification: Transparency of chemicals in materials can promote safe circular economies, so that less waste end up in the oceans, as well as less highly hazardous chemicals, because substitutions can be done to safer alternatives.

SDG 15, targets 1:15 and 15:5
Justification: Transparency of chemicals in materials can promote safe circular economies, so that less waste end up in the environment, as well as less highly hazardous chemicals, because substitutions can be done to safer alternatives. This helps us preserving ecosystems and their biodiversity. The targets serve to protect terrestrial and limnic ecosystems and their biodiversity.

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[1] https://noharm-uscanada.org/sites/default/files/documents-files/51/Body_Burden_in_Newborns.pdf
[2] https://noharm-uscanada.org/issues/us-canada/safer-chemicals
[3] https://www.healthandenvironment.org/our-work/toxicant-and-disease-database/
[4] https://pqmd.noharm.org/documents/cleaning-chemical-use-hospitals
[5] https://www.iol.co.za/saturday-star/news/sas-chemical-pollution-plight-14488157
[6] https://ec.europa.eu/health/sites/health/files/files/environment/study_environment.pdf
[7] https://ec.europa.eu/info/sites/info/files/study_report_public_consultation_pharmaceuticals_environment.pdf
[8] https://zembla.bnnvara.nl/nieuws/the-real-price-of-cheap-medicine
[9] https://pqmd.noharm.org/documents/cleaning-chemical-use-hospitals
[10] Bernstein, J Combined Respiratory and Cutaneous Hypersensitivity Syndrome to Quat. Amines. Journal Allergy Clin Immunology 1994; Vol94, No.2, pp 257-259
[11] www.informinc.org/cleanforhealth.php
[12] http://www.noharm.org/details.cfm?ID=1677&type=document