



POLICY BRIEF

Water and pharmaceuticals – a shared responsibility

Pharmaceutical products are essential to our society, and their use is likely to increase due to a growing, ageing population. In sufficient concentrations, pharmaceuticals will impact the recipient waterbody, although many tools to reduce environmental impact from pharmaceuticals are already available. Combining efforts along the pharmaceutical life cycle - production, procurement, consumption, and wastewater treatment - will be key for sustainable development and lead to increased transparency and understanding between stakeholders.

Active pharmaceutical ingredients (APIs) are designed to affect various processes in the human body. In order to reach and interact with the right organ in the body, they are not only designed to be stable, which means that they can remain in the environment for a long time. The ability to interact with biological processes also means that these drugs can affect other species as well. Due to the risk of promotion of antibiotic resistance, this group of substances is of specific global concern.

The main emission of pharmaceutical residues in Sweden arises from use. The substances or their residues are excreted and flushed down the toilet. The built in resistant nature of APIs is a challenge for standard wastewater treatment plants (WWTP). One of the most critical point source of emissions occurs from insufficient treatment of effluent from pharmaceutical manufacturing processes. Including improper disposal of unwanted/unused drugs or pills that have passed their expiration date, APIs have become ubiquitous micro pollutants in our waters and are becoming a growing concern around the globe.

Today, pharmacies have limited scope to address environmental sustainability in procurement practices due to the Pharmaceutical Reimbursement system. Even the marketing and communication of environmental information is an unresolved issue. On the other hand, ironically, Sweden holds a leading role owing to its advanced sustainability policies and the dedication they demonstrate internationally, putting focus on and supporting sustainable procurement praxis.

The lack of transparency to the general public within the pharmaceutical industry presents a huge challenge that restricts the number of options available for sustainability throughout the supply chain. Moreover, the complexity of the supply chain presents further obstacles including traceability, limiting information on the origin and manufacturing of active pharmaceutical substances.

Upstream solutions, including optimizing total consumption, promoting and improving environmental risk assessment, and raising awareness about the environmental risks associated with certain pharmaceuticals - all without compromising patient safety - are ways to minimize the release of pharmaceuticals into the environment. Additionally, we have not yet seen the full potential on how the fast moving progress of “IT into everything” will influence the optimal use of pharmaceuticals and the healthcare sector.

Upstream measures are recommended by national agencies and authorities, and some are implemented on a regional level. But nevertheless, the European Union, where pharmaceutical regulation is harmonized, does not have a coherent implementation plan.

Improving treatment of pharmaceutical residues in wastewater can reduce emissions to waterbodies. However, end-of-pipe solutions do not solve the environmental problem – only shift its focus. Furthermore, it could result in decreasing public awareness and decision makers losing interest in the challenges the water sector has to face. To reduce emissions, discharges and losses of pharmaceutical products to the aquatic environment, there is a need for coherent actions at several different levels. Technology is readily available to effectively treat wastewater containing pharmaceutical residues. But since this would require significant investments, and can increase energy consumption by two to 10 times compared to current treatment technology, it is important to weigh the need for WWTP efforts against other economic and environmental objectives, such as cost efficiency, energy and climate change.

Recommendations

- Develop new business opportunities for the industry to position itself and build a market for pharmaceuticals with reduced environmental impact. Sweden is seen as a good pilot market for this.
- Ensure that the development of tools for measuring and reducing pollution and resource consumption during the production of pharmaceuticals are aligned with the development of sustainability criteria for public procurement and private buyers, to ensure broad application and increase transparency and verification.
- The industry's effluent management must apply state of the art wastewater treatment.
- Through dialogue and cooperation, develop the process of sustainable public procurement between authorities, pharmacies, the public sector, industry and other stakeholders by:

- Creating a platform for co-operation (e.g. at the National Agency for Public Procurement in Sweden)
- Developing clear and shared criteria for sustainable procurement of pharmaceuticals
- Developing clear and shared methods for follow-up including goals, risks and protocols in case of non-compliance
- Developing tools for sustainable procurement: risk assessment and follow-up
- Investigating legal regulations regarding transparency and documentation
- Co-operating with leading international stakeholders in sustainable procurement of pharmaceuticals
- Promote and improve environmental risk assessment of pharmaceuticals more actively.
- Impose prescription requirement on pharmaceuticals with high environmental impact.
- Consider alternative measures for handling excreted pharmaceutical waste.
- Publically promote the fact that end-of-pipe treatments alone do not solve environmental problems.
- When advanced wastewater treatment may be considered, as for sensitive recipient waterbodies, activated carbon and ozonation are considered the most promising methods for pollutants removal. The Moving Bed Bio Reactor technology is another promising technology.
- Specifically address the risk of anti-microbial resistance promotion from environmental releases.
- Current screenings and attempts to obtain an overview of occurrence of pharmaceuticals in the environment must be co-ordinated and established as systematic monitoring.

About the SIWI Swedish Water House Cluster Group Water and Pharmaceuticals

SIWI Swedish Water House has brought together Swedish experts and stakeholders in pharmaceuticals and water management. The aim was to promote recommendations for more effective implementation of environmental regulations limiting pharmaceutical pollution. Representatives from SIWI Swedish Water House, Apotek Hjärtat, Pfizer Health AB, Fresenius-Kabi, The Research-Based Pharmaceutical Industry (LIF), Stockholm County Council (SLL), Swedish Environmental Research Institute (IVL), Käppalaförbundet, Uppsala University Hospital, and Uppsala County Council are core members of the group.

