

Minimising Pharmaceuticals in the Environment



What's the Problem?



More than 600 pharmaceuticals have been found in the environment worldwide*

Pharmaceuticals enter the environment (water, soil, sludge, & organisms) at all stages of their life cycle

Pharmaceuticals can end up in drinking water and accumulate in vegetables and fish

...raising concern about the impact they can have on humans

A Problem by Design: Active Pharmaceutical Ingredients (APIs)

APIs are designed to be biologically active and resistant to metabolic degradation, in order to be effective as a drug



APIs in the environment can cause reproductive failure, growth inhibition, behavioural changes and population collapse

Minimisation must occur across the entire life cycle!

Production



Use



Disposal

Solutions Along the Life Cycle: Minimising Release



Production



Use



Disposal

Manufacturers/Producers

Health Institutions/Professionals

Health Institutions/Professionals

Must be held accountable and responsible for the products they place on the market

We need improved prescription practices

Collect the urine of specific patient groups for separate treatment



Rational doses & appropriate pack sizes

These patients should also do this at home

And they must implement prevention and mitigation systems for spills & release

Promote healthy lifestyle choices!

Implement advanced wastewater treatment systems

Raise public awareness about the appropriate use of medication

Raise Awareness!

Educate patients about the pharmaceuticals in the environment

...about safe disposal practices, and nearby disposal locations

Provide collection services

Companies/Suppliers

Patients

Patients

Should comply with all environmental requirements

Should use medication rationally

DO NOT accumulate unfinished prescriptions at home

There needs to be more stringent:

Finish doctor's prescriptions!

DO NOT dispose in toilet or sink

Permits

Need to minimise use of pharmaceuticals in agriculture

DO NOT release pharmaceuticals into rivers!

Registrations

Food Producers

Food Producers

Licenses

ORGANIC FARMING

Should ensure responsible disposal

Restrictions!

Regulate pharmaceutical contaminants in fertilisers

We need improved water treatment technologies for large-scale agro production

Sustainable Procurement Initiatives

& Regulate the use of growth promotants

DO NOT release pharmaceuticals into rivers!

Transparency



Companies need to know their supply chains

Regulate the use of growth promotants

DO NOT release pharmaceuticals into rivers!

Transnational laws are needed to ensure minimisation of pharmaceuticals in the environment!

*Kuester A, Adler N. 2014 - <http://rstb.royalsocietypublishing.org/content/369/1656/20130587>
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