

The Management of Pharmaceuticals in the Environment (PIE) – FAQ

Key questions and answers

Q: How do pharmaceuticals get into the environment?

A: Like many foods and supplements that are consumed by humans and animals, pharmaceuticals are not always completely broken down or absorbed by the body. Thus, the primary reason for the presence of active pharmaceutical ingredients (APIs) in the environment is the excretion of substances by humans and animals that then find their way into surface waters through municipal waste water treatment systems.

There are other, less significant, sources such as improper disposal of unused or expired medicines being flushed down toilets or sinks. EFPIA supports appropriate processes and systems to ensure proper disposal of unused medicines. In addition, to a lesser extent pharmaceutical manufacturing facility discharges can also contribute to the compounds found in surface waters .

Q: Do pharmaceuticals harm the environment?

A: It is generally acknowledged that pharmaceuticals occur at extremely low levels in the environment and EU medicines regulations have been established to evaluate and assess the potential impact of human and environmental exposure to pharmaceutical residues. The scientific literature provides very little information on real environmental impacts which may be attributable to the presence of pharmaceuticals and has not provided consistent evidence that human pharmaceuticals occurring as residues from patient excretion in the environment have an impact on populations or ecosystems. However, the pharmaceutical industry acknowledges and supports the need for greater efforts in understanding the long term environmental impact of man-made substances, including medicines, and in minimizing their release into the environment

Q: How is PIE regulated?

A: The pharmaceutical industry is highly regulated across all its activities:

- R&D is mainly regulated under the pharmaceutical legislation (Directive 2001/83/EC, as amended) as well as partly by REACH. Under the pharmaceutical legislation Article 8(3) provides for the evaluation of the potential environmental risks posed by medicinal products via an environmental risk assessment (ERA) submitted with all new marketing authorisation applications.

- The disposal of unused and expired medicines is regulated at Member States level through voluntary take back schemes (please refer to Article 127b of EU Directive 2001/83/, as amended).
- Manufacturing activities are covered by two pieces of horizontal legislation in the EU
 - Under the REACH legislation there is an exemption for Active Pharmaceutical Ingredients (APIs) but other compounds used in manufacturing development are covered
 - Industry manufacturing emissions from manufacture of pharmaceutical substances are covered by the Industrial Emissions Directive which applies to most EU industrial sectors.

In addition we work closely with environment and health regulators to ensure that any concerns regarding the safety or efficacy of the medicines we discover are fully evaluated.

Q: What evidence is there of harm to humans from PIE?

A: All pharmaceuticals are extensively-tested for safety prior to being used by patients. The much lower concentrations found in the environment are therefore highly-unlikely to have adverse effects on humans

Q: What is the current situation with regards to research/studies carried out on the impact of pharmaceuticals in the environment?

A: Pharmaceuticals are among the most extensively studied for their safety in humans. At the time of writing there are several initiatives underway on pharmaceuticals in the environment in Europe. EFPIA and its member companies are committed to continue working with experts from appropriate scientific, regulatory, and trade organizations to continue research in this area to resolve any unanswered questions. The goals for selected research projects should be to: facilitate identification, prioritization and evaluation of human health and environmental risk of the relevant emerging contaminants. EFPIA is also ready to work to improve the scientific basis of regulatory decision-making in this area.

Q: Why doesn't the industry invest more time and research to develop environmentally friendlier medicines?

A: We do invest time to look into ways to conduct environmentally friendlier development and production processes as well as to obtain environmentally friendlier medicines. The major guiding principle for developing medicinal products is safety and efficacy for human and veterinary use. The attrition rate in the industry shows this is a difficult undertaking.

Q: Wouldn't it be better to apply the precautionary principle more strictly rather than wait for evidence of harm?

A: The Commission Communication of 2000 on the precautionary principle (COM(2000) 1 final) states that this principle co-exists alongside other recognised principles of EU legislation, namely, proportionality, non-discrimination, consistency and cost-benefit analysis, etc. and that policy-makers should aim to balance these considerations while also providing for new scientific evidence and involving all interested parties. We believe that a risk based approach should be applied. The issue of 'harm' should be interpreted by a risk based approach which assesses the level of harm to the environment or human health in terms of risk of exposure to hazardous chemicals and proof of effect.

Q: Should the regulator have the power to remove environmentally harmful pharmaceuticals from the market?

A: The authority exists under the current medicines legislation (refer to Article 20(4) of Regulation 726/2004/EC), as amended. However we believe that such a decision must only ever be made after taking into consideration the potentially-serious public health consequences that would occur as a result

Q: Do we absorb drug residues when drinking water? Is it safe to drink water?

A: Questions relating to the safety of drinking water have been explored by the industry, regulators, academia and non – government sectors. To date there is no published evidence that exposure to minute concentrations detected in drinking water creates any appreciable risk to human health. On the contrary, studies and publications to date agree that it is highly unlikely that the very small quantities of even potent compounds detected in the environment would be harmful to human health. These conclusions have been repeatedly confirmed by the World Health Organisation and once again in its 2012 report on 'Pharmaceuticals in drinking water' where it states: "The substantial margin of safety for consumption of very low concentrations of pharmaceuticals in drinking water suggests that appreciable adverse impacts on human health are very unlikely". Another study from the UK's Drinking Water Inspectorate published in 2012 reaches a similar conclusion: "...it would appear that the low or non-detectable levels of pharmaceuticals and illicit drugs present in drinking waters in England and Wales do not pose an appreciable risk to human health."

In fact at the concentrations that have typically been measured it would, for the majority of medicines, take someone who is drinking large quantities of water daily, decades to be exposed to the equivalent of one therapeutic dose of a pharmaceutical.

Q: Does the industry routinely measure levels of its products in the environment?

A: As part of the new current drug approval process, companies filing for a drug registration have to produce an environmental risk assessment¹. In addition to tests to examine degradation in the environment and potential toxicities, the amount expected to enter the environment is estimated using a formula set out by the European Medicines Agency that considers the daily dose and expected patient population. To gather actual measurements in a way that is meaningful is very difficult. The industry is exploring the use of predictive computer models but the methodologies are still evolving.

Q: Do pharmaceuticals stay in the environment forever?

A: Pharmaceuticals do degrade in the environment at varying rates. Factors affecting the rate include temperature, exposure to sunlight, availability of oxygen, and the nature of the pharmaceutical structure.

Q: Is the industry consistent in the standards it applies in Europe across the world?

A: The pharmaceutical industry recognises the importance of good manufacturing practices in helping to minimise releases from manufacturing sites; this is reflected in policies and standards adopted by all EFPIA members. At manufacturing sites that are affiliated to globally operating pharmaceutical companies the same standards apply across the world.

The pharmaceutical industry is also working with third party manufacturers to ensure that they apply the same environmental policy principles on a global basis. This is an area of ongoing focus for industry.

Q: What impact has the increased use of third party manufacture had on environmental standards?

A: The increased use of third party manufacturers, especially in countries outside Europe and the USA, increased the need to develop environmental standards also in these countries. In many cases environmental laws of Western countries have been copied into their national

¹ EMEA Guideline on the environmental risk assessment of medicinal products for human use (Doc.Ref.EMEA/CHMP/SWP/4447/00 corr 1*)

legislative framework. We believe that the governance processes that companies have brought to their commercial relationships with partners in third party manufacturers have led to the improvement of environmental standards

Q: What are you doing to improve standards inside and outside the EU?

A: International suppliers are governed under local regulation and most major industry purchasers have programmes to ensure that suppliers doing business with them adhere to those regulations. Some develop and implement voluntary global company standards that are in line or go beyond local legislation, respectively. In cooperation with third parties the local situation is increasingly improved, although we are ready to consider how these programmes can be further improved.

Q: Do manufacturers take back unused medicines?

A: Under Article 127b of EU Directive 2001/83/, as amended, all EU Member States “shall ensure that appropriate collection systems are in place for medicinal products that are unused or have expired”.

Existing data suggests that 19 Member States currently have collection systems in place². More than half of these schemes, 11, are operated by the pharmaceutical industry or by pharmacies; the rest are paid for by municipalities. The majority of waste collected is incinerated. Unused medicines are never recycled by manufacturers for subsequent use by patients.

² Bulgaria, Cyprus, Greece, Latvia, Luxembourg, Malta, Romania & Slovenia do not yet have systems in place.