The Wise List and Environmental Considerations — 15 Years of Experience

2017-06-21

Siv Martini, MSc Pharm
Helena Ramström, MSc Pharm, PhD
Stockholm County Council
Unit of Medicine Support
Sweden
The Wise List

Environmentally Classified Pharmaceuticals
21 county councils are responsible for the healthcare in Sweden.

Each county council has at least one drug and therapeutic committee, DTC.

The DTCs formulate treatment recommendations.

The recommendations are usually published in a recommendation list. In Stockholm the list is called The Wise List.

---

Photo: iStock/Christopher_Futcher
The Wise List Concept

Some examples are:

- Doctors and pharmacists visit health clinics and inform the prescribers

- There are two versions of the Wise List:
  — one for prescribers
  — one for patients

- Information campaigns
Environmental Information

- Doctors and pharmacists visit health clinics and inform the prescribers.
- Every clinic has an environmental goal. A common goal is that 80% of the prescribers get information about the environmental impact of pharmaceuticals.
Pharmaceuticals in treated wastewater in Stockholm

Every year the sea is supplied with:

- **930 kg** pharmaceuticals for cardiovascular diseases
- **670 kg** pharmaceuticals for nervous system and pain
- **150 kg** antibiotics
Pharmaceuticals in the Wastewater

< 10 % from hospitals

> 90 % from households

Photo: iStock/Floortje
Environmental Considerations in the Wise List since 2005

- A list of recommended pharmaceuticals for common diseases issued by the Drug and Therapeutics Committee.

- More than 80 % of the prescribed pharmaceuticals are in accordance to the recommendations in the Wise List.
Environmetnally Classified Pharmaceuticals — started in 2003

Pharmaceutical substances are assessed with respect to:

- Environmental hazard (2003)
- Environmental risk (2005)
Environmentally Classified Pharmaceuticals now in a Database

- Environmental hazards and risks
- Results from environmental monitoring of surface water, drinking water and fish
- Information from different research projects
- Degradation in wastewater treatment plants
Environment and Pharmaceuticals

Here you can find information for the environmental impact of pharmaceuticals. You can search for the product name, the substance name or to get an overview, search for ATC Code (ATC group). Unless otherwise is stated, the environmental impact means impact of pharmaceuticals when used.

Information for the classification

The first search view presents information about the classification of the environmental hazard and the environmental risk. The environmental hazard is classified from 0-9, where a high number indicates high properties for making an environmental impact.

The classification of the risk comes from fast.se and is based on theoretical calculations of the risk, posed by the pharmaceutical substances when used at their current extent in Sweden. For more information see in the menu to the right, Classification.

For some substances there is also a risk assessment made on the basis of concentrations measured in the environment in Sweden and efficacy studies with high quality. This assessments are presented in the document for the substances and is made by independent ecotoxicological expertise. A work is going on to gradually present substance documents with this type of information and also present comparisons of the environmental risks of substances who are recommended for the same indication. (The document text is accessed by clicking on the blue-colored document name).

News
### Environment and Pharmaceuticals

<table>
<thead>
<tr>
<th>Document</th>
<th>Substance</th>
<th>Risk</th>
<th>PBT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethinylestradiol</td>
<td>ethinylestradiol b...</td>
<td>High</td>
<td>9</td>
</tr>
</tbody>
</table>
Environment and Pharmaceuticals

Ethinylestradiol

Preparations: Abelonelle 28, AmoRest 28, Anastrelia 28, Belara, Show all

Information

Ethinylestradiol is on the EU list of substances whose concentrations in surface waters should be monitored in the Member States for environmental reasons. Affects fish fertility even at concentrations as low as 1 ng / L - concentrations found in Swedish, treated municipal wastewater.

Ethinylestradiol is included in the Stockholm County Council’s table of pharmaceuticals with a negative environmental impact according to the environmental programme 2017-2021.

Ethinylestradiol is recommended in The Wise List 2017.

The risk classification (Fass.se) is based on total sold amount (kg) of the substance in Sweden during the year 2011.

Last updated 2017-06-14.

References

# Environment and Pharmaceuticals

<table>
<thead>
<tr>
<th>Document</th>
<th>ATC-Kod</th>
<th>Risk</th>
<th>PBT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evolocumab</td>
<td>C10AX13</td>
<td>Exempt</td>
<td></td>
</tr>
<tr>
<td>Alirocumab</td>
<td>C10AX14</td>
<td>Exempt</td>
<td></td>
</tr>
<tr>
<td>Atorvastatin</td>
<td>C10AA05</td>
<td>Insignificant</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>C10BA05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bezafibrate</td>
<td>C10AB02</td>
<td>Insignificant</td>
<td>6</td>
</tr>
<tr>
<td>Cholestyrmine</td>
<td>C10AC01</td>
<td>Cannot be excluded</td>
<td>8a</td>
</tr>
<tr>
<td>Colestipol</td>
<td>C10AC02</td>
<td>Cannot be excluded</td>
<td></td>
</tr>
<tr>
<td>Ezetimibe</td>
<td>C10AX09</td>
<td>Insignificant</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>C10BA02</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C10BA05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fenofibrate</td>
<td>C10AB05</td>
<td>Insignificant</td>
<td>3</td>
</tr>
<tr>
<td>Fluvastatin</td>
<td>C10AA04</td>
<td>Insignificant</td>
<td>4</td>
</tr>
<tr>
<td>Gemfibrozil</td>
<td>C10AB04</td>
<td>Low</td>
<td>6</td>
</tr>
<tr>
<td>Pravastatin</td>
<td>C10AA03</td>
<td>Insignificant</td>
<td>4</td>
</tr>
<tr>
<td>Rosuvastatin</td>
<td>C10AA07</td>
<td>Insignificant</td>
<td>1</td>
</tr>
<tr>
<td>Simvastatin</td>
<td>C10AA01</td>
<td>Low</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>C10BA02</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Instructions for the Wise List 2017

... If the medical effects and safety are comparable, the drug with the most favourable total cost and with the lowest environmental impact should be recommended ...

... A substance with a small or moderate impact on the environment should be recommended before a substance lacking environmental information ...

... When possible also take other environmental effects into account like reduction in wastewater treatment plants, environmental effects by manufacturing ...
Other Environmental Aspects

- Pharmaceutical formulation
- Packaging
- Starter packs in the reimbursement system?
Changing from Felodipine to Amlodipine

Patients per 1,000 inhabitants
Changing from Diclofenac to Naproxene

Patients per 1,000 inhabitants

- Diklofenak
- Diklofenak komb
- Naproxen
## Table of Pharmaceuticals with Negative Environmental Impact — Stockholm County Council

<table>
<thead>
<tr>
<th>Substance</th>
<th>Substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>amoxicillin</td>
<td>glibenclamide</td>
</tr>
<tr>
<td>azithromycin</td>
<td>haloperidol</td>
</tr>
<tr>
<td>ciprofloxacin</td>
<td>irbesartan</td>
</tr>
<tr>
<td>citalopram</td>
<td>levonorgestrel</td>
</tr>
<tr>
<td>clarithromycin</td>
<td>meclozine</td>
</tr>
<tr>
<td>diazepam</td>
<td>oxazepam</td>
</tr>
<tr>
<td>diclofenac</td>
<td>risperidone</td>
</tr>
<tr>
<td>erythromycin</td>
<td>roxithromycin</td>
</tr>
<tr>
<td>ethinylestradiol</td>
<td>sertraline</td>
</tr>
<tr>
<td>estradiol</td>
<td>tetracycline</td>
</tr>
<tr>
<td>felodipine</td>
<td>trimethoprim</td>
</tr>
<tr>
<td>fluoxetine</td>
<td>venlafaxine</td>
</tr>
<tr>
<td>flupentixol</td>
<td></td>
</tr>
</tbody>
</table>
Environmental Goals for Danderyd University Hospital

- Diclofenac: -68%
- Felodipine: -56%
- Tramadol: -39%
- Zolpidem: -28%
Upstream Work is still Important

- Not all wastewater treatment plants will be upgraded
- Some cities and villages will be without modern technique
- There are many individual wastewater plants in Sweden
Thank you for listening!

siv.martini@sll.se
helena.ramstrom@sll.se

janusinfo.se/environment