



EUROPEAN
REGIONAL
DEVELOPMENT
FUND



CWPharma



LATVIJAS
HIDROEKOĻĀJAS
INSTITŪTS



LATVIJAS VIDES, ĢEOĻĀJAS
UN METEOROLOĢIJAS CENTRS

No farmaceitiskajām vielām tīri ūdeņi - CWPharma

seminārs ieinteresētajām pusēm

22.marts, 2019,

Peldu iela 25, Rīga

Vides aizsardzības un reģionālās attīstības ministrija, 101.telpa

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Par projektu

Galvenie mērķi:

- Baltijas jūras reģionā **novērtēt** šī brīža **farmaceitiski aktīvo vielu emisijas** un to **vides riskus**
- **Uzlabot**
 - Notekūdeņu attīrīšanu
 - Atkritumu apsaimniekošanu
 - Iespējamo atļauju piemērošana
- **Palielināt izpratni** par šī brīža stāvokli Baltijas jūras reģionā attiecībā pret farmaceitiski aktīvajām vielām



Par projektu:

- Finansējums:
 - Baltijas jūras reģiona 2014 – 2020 transnacionālās sadarbības programmas finansējums 2.9 M €
 - Kopējais budžets 3.7 M €
- 15 partneru organizācijas no 7 valstīm
- 20 asociētie partneri
- Realizācijas laiks: 10/2017 – 09/2020



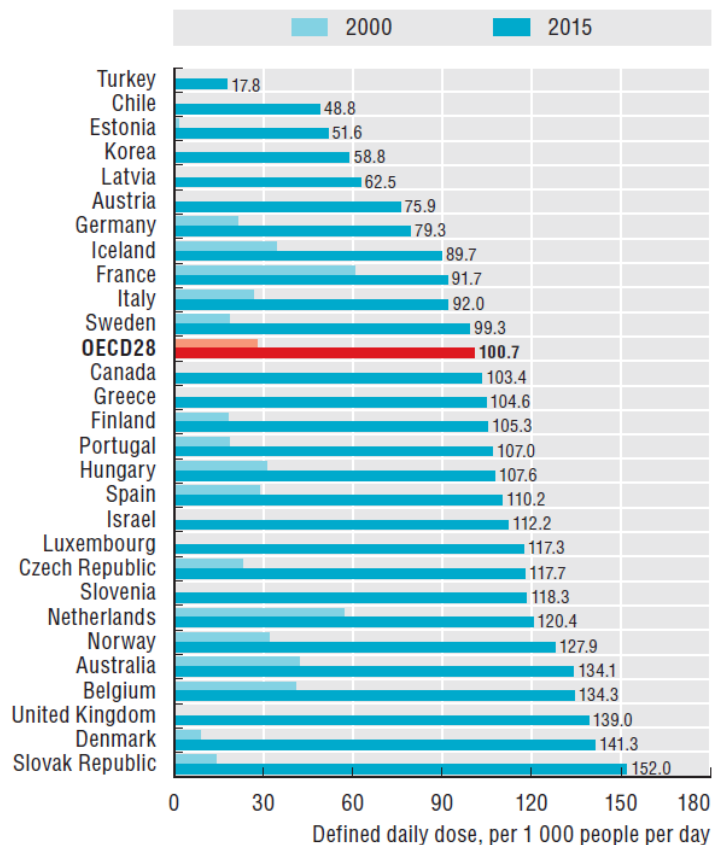
Projekta partneri:

Country	Organisation
FI	Finnish Environment Institute (SYKE)
FI	Finnish medicines agency (Fimea)
FI	Helsinki Region Environmental services Authority (HSY)
SE	County administrative board Östergötland (CAB)
SE	Tekniska Verken i Linköping (TVAB)
EE	Estonian Environmental Research Centre (EERC)
EE	Estonian Waterworks Association (EVEL)
DK	Aarhus university (AU)
DK	Kalundborg Utility (KU)
PL	Institute of Environmental Protection – National Research Institute (IOS)
LV	Latvian Institute of Aquatic Ecology (LIAE)
LV	Latvian Environment, Geology and Meteorology Centre (LEGMC)
DE	Berlin Center for Competence of Water (KWB)
DE	German Association for Water, Wastewater and Waste (DWA)
DE	German Environment Agency (UBA)

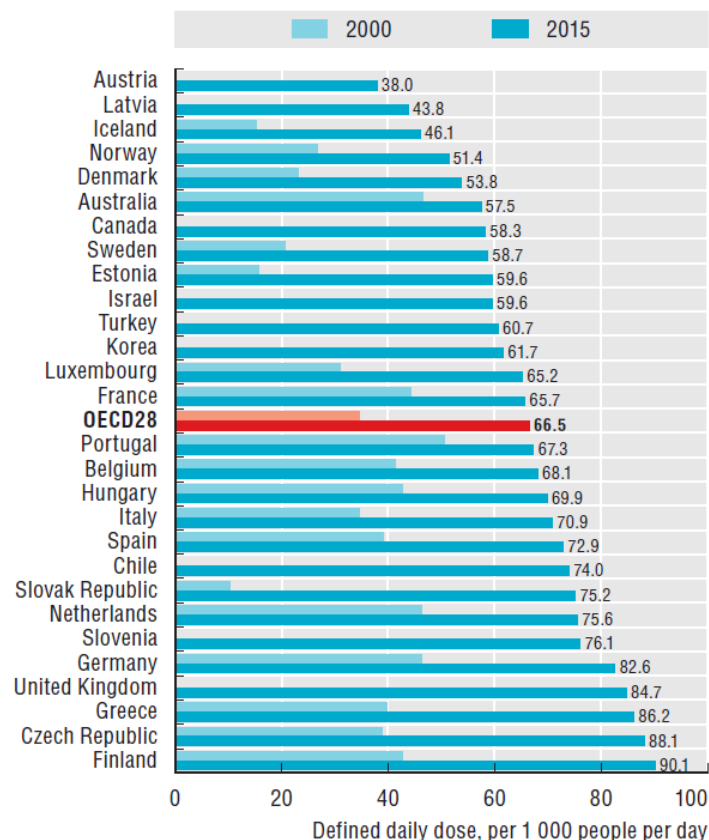
Projekta asociētie partneri:

	Organisation Type	Organisation (English)
FI	National public authority	Ministry of the Environment
EE		Ministry of the Environment
FI	Regional public authority	Centre for Economic Development, Transport and the Environment for Uusimaa
FI		Regional State Administrative Agency for Southern Finland
SE		Region Östergötland, Environment and Security department
SE	Sectoral agency	Swedish Environmental Protection Agency
SE		Medical Products Agency
SE		The Swedish Agency for Marine and Water Management
DK		Danish Environmental Protection Agency
SE	Interest groups including NGOs	The Swedish Association of the Pharmaceutical Industry AB LIF
SE		The Swedish Water and Wastewater Association
FI		Finnish Water Utilities Association
FI		Pharma Industry Finland (PIF)
FI		Association of Finnish Pharmacies
SE		Coalition Clean Baltic
DK		Danish Waste and Wastewater Association (DANVA)
BY		Center for Environmental Solutions
LV	Infrastructure and public service provider	Riga water, Ltd.
DE		Berlin Water Company, Research and Development
SE	Higher education and research institution	IVL Swedish Environmental Research Institute

10.7. Cholesterol-lowering drugs consumption, 2000 and 2015 (or nearest year)

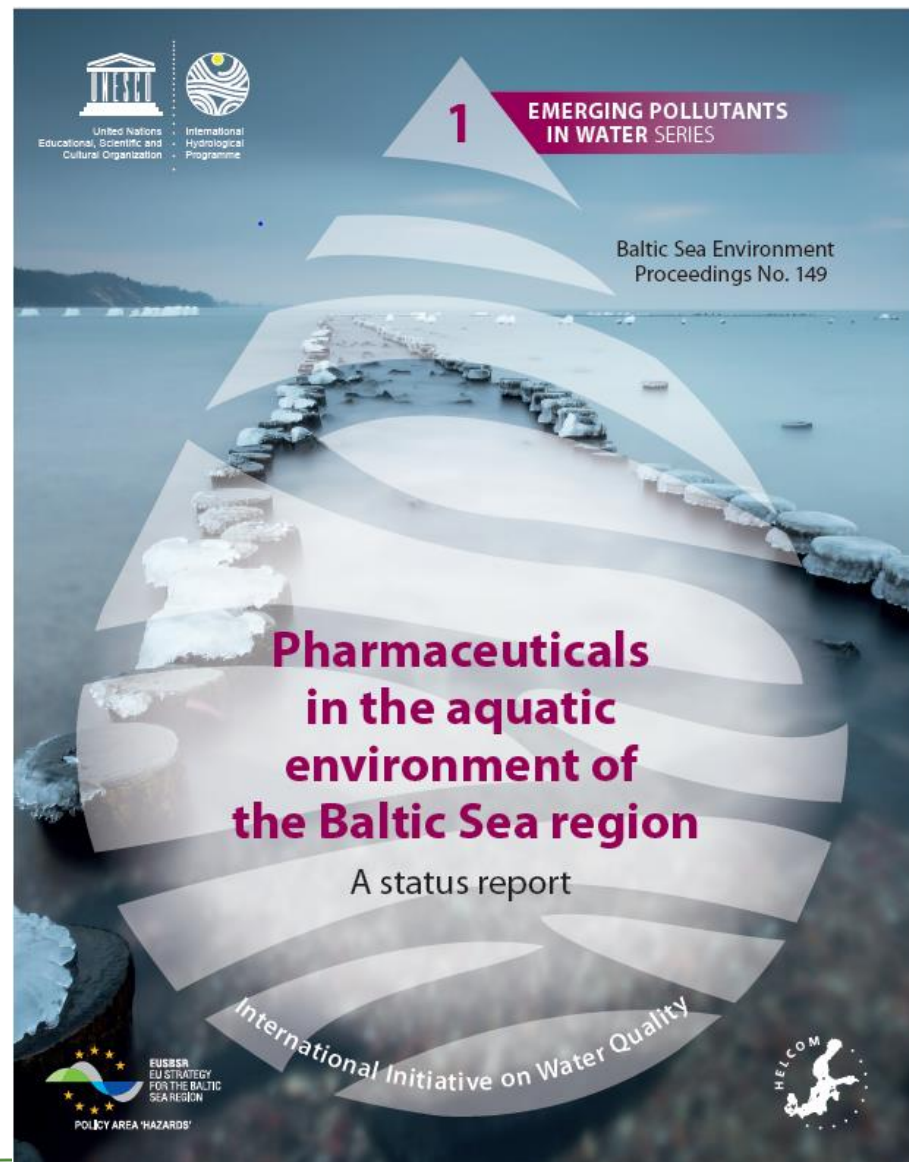


10.8. Antidiabetic drugs consumption, 2000 and 2015 (or nearest year)



OECD (2017): "Pharmaceutical consumption", in *Health at a Glance 2017: OECD Indicators*, OECD Publishing, Paris.

Izpētes areāli
balstīti uz
reģioniem un
vidēm, kas minēti
HELCOM 2017. gada
atskaitē
«Pharmaceuticals in
the aquatic
environment of the
Baltic Sea region»



More data from the whole region are needed on:

- sales and consumption of pharmaceuticals, and pharmaceutical waste management
- concentrations of pharmaceuticals in MWWTP influents and effluents, as well as in rivers
- the occurrence and fate of metabolites in freshwater, wastewater, and sea water
- concentrations of pharmaceuticals in sewage sludge and soil
- emissions of pharmaceuticals to the environment via other pathways such as solid waste disposal and agricultural runoff
- sales and consumption of veterinary pharmaceuticals, and their sources, pathways and loading to soils, surface and groundwater systems and the aquatic environment (including aquaculture)
- analytical methods used for measuring concentrations and their sensitivity

Veterinārās medicīnas nozīme

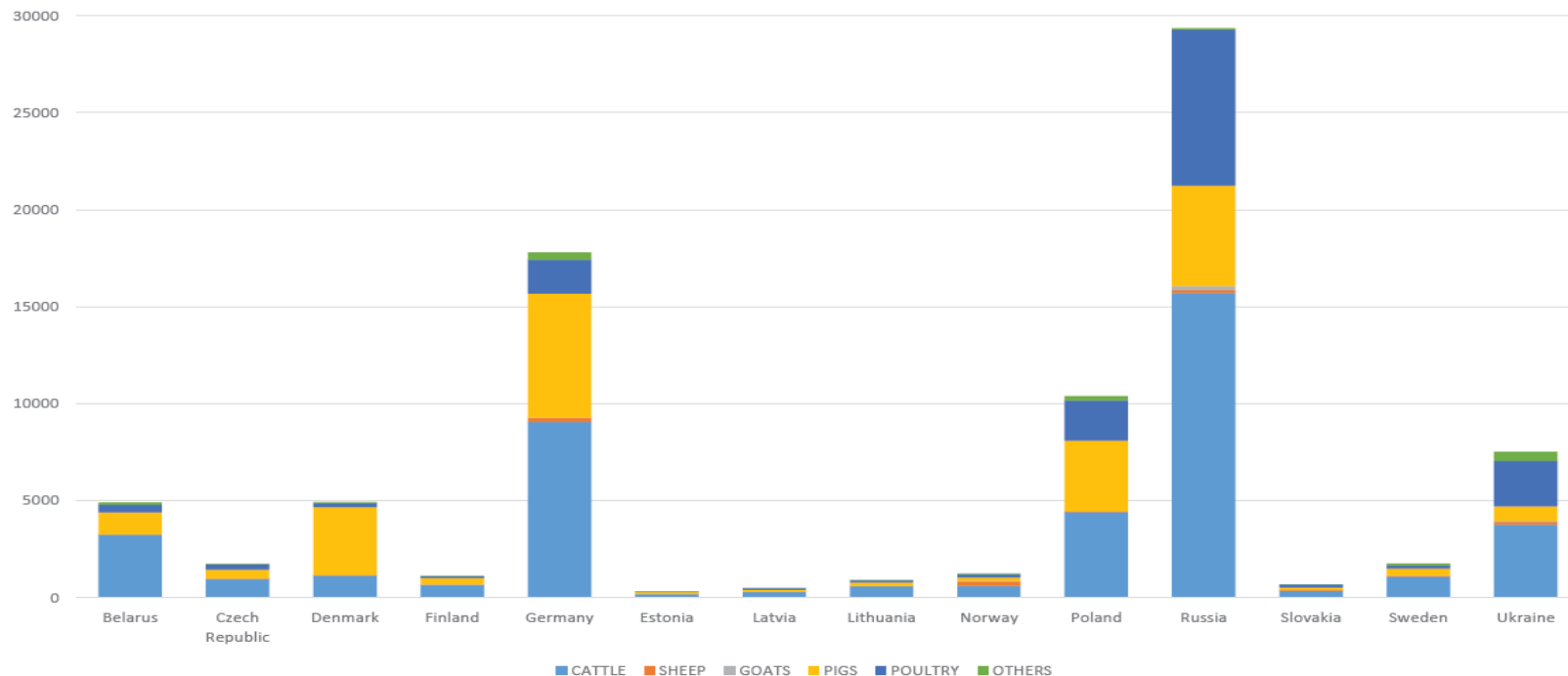


Fig. 9 Livestock population, expressed in the livestock units (1000 LSU), in the Baltic Sea catchment basin countries (EuroStat 2010, FAOSTAT 2010, Federal State Statistics Service of the Russian Federation 2013)

Reference: Skorupski J. (ed.). 2013. Report on Industrial Livestock Farming in the Baltic Sea Region – environmental protection context. Coalition Clean Baltic. Uppsala

Periods 2003. – 2014.gads

Table 1. *An overview of data provided in response to a HELCOM questionnaire on occurrence, sources and pathways of pharmaceuticals in the Baltic Sea region.*

Source: Original data.

Country	Production & waste		Sales, Consumption		Monitoring data					
	Production	Waste management	Human	Veterinary	WWTPs	Sludge	Rivers	Sea water	Sediments	Biota
Denmark					●	●	●	●		
Estonia		●	●		●		●	●	●	
Finland	●	●	●	●	●	●	●	●	●	
Germany		●	●	●	●		●	●		
Poland								●		
Russia			●		●			●		
Sweden		●	●		●	●	●	●	●	●

Darba paka 2 (WP2) – esošās situācijas izpēte

Identificētu šī brīža avotus, emisijas un farmaceitisko vielu koncentrācijas vidē. Dati tiks izmantoti modelēšanā (Baltijas jūras līmenī).

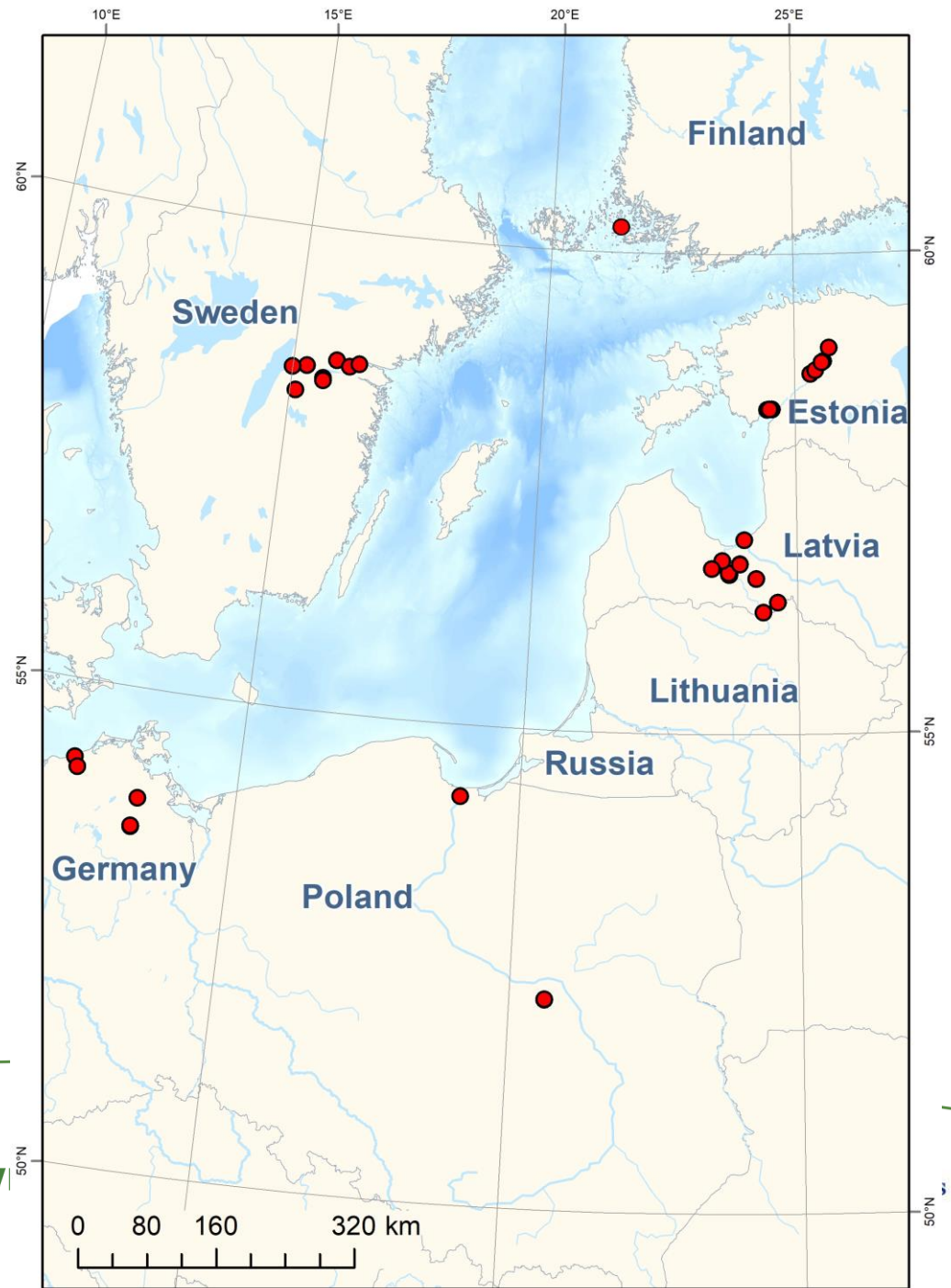
Izpētes teritorijas katrai valstij:

Upju sateces baseini, kuros būtu NAI – ne tikai municipālie, bet arī no māļputnu/māļlopu fermu, no slimnīcām u.c. iespējamiem farmaceitiski aktīvo vielu avoti

- Somija (2 teritorijas)
 - upes sateces baseins; ietvertie NAI + zivju ferma
- Polija (1 teritorija)
 - Vistulas upe pirms grīvas
- Zviedrija (1 teritorijas)
 - upes sateces baseins; ietvertie NAI
- Vācija
 - Waarnow – Peene upju sateces baseins; ietvertie NAI
- Igaunija
 - Pērnavas upes sateces baseins; ietver NAI + zivju ferma
- Latvija
 - Galvenokārt, Lielupes sateces baseins; ietvertie NAI + dzīvnieku fermas

Riska novērtējums (katrai valstij atsevišķi) + Plūsmas modelis Somijas un Latvijas teritorijai

**Paraugu
ievākšanas vietas
Baltijas jūras
reģionā + Somija
(Vantaa upe)**



Paraugu veidi un skaits

Basic information		Monitoring plan															
Description	Country	Name of river basin district	2 samples per WWTP	2 samples per WWTP	2 samples per WWTP	The number will be dependent on how many WWTPs that are included and the river system.	The number will be dependent on how many WWTPs that are included and the river system.	Optional: 2 samples	Optional: 2 samples	Optional: 2 samples	Optional: 2 samples	Optional: 2 samples	Optional: 2 samples	Optional: 2 samples	Optional: 2 samples	Total no of samples	
						Water sample upstream of WWTP	Water sample downstream of WWTP	Water sample - receiving estuary of Baltic Sea	Sediment sample - receiving estuary of Baltic Sea	Soil sample where sewage sludge have been applied	Soil sample where manure has been applied	Samples from hospital	Samples from manufacturing facilities	Water sample close to fish farm	Sediment sample close to fish farm		Landfill leachates
Estonia		Pärnu	6	6	6	2	2	2	2	0	2	2	0	2	1	0	33
Poland		Vistula river catchment	2	2	2	2	2	2	0	0	0	0	0	0	0	0	12
Germany_original		Warnow-Peene	6	6	2	3	3	4	0	2	2	2	2	0	0	0	32
Germany_new			8	8	2	4	2	4	0	1	0	2	0	0	0	0	31
		Rostock	2	2		2		2									
		Wismar	2	2								2					
		Neubrandenburg	2	2		2		2									
		Greifswald	2	2	2					1							
Sweden		Motala ström	6	6	6	6	2	2	4	0	2	0	0	0	0	0	40
Finland		A fish farm	0	0	0	0	0	0	0	0	0	0	0	12	4	0	16
Finland		Vantaa + estuary	6	6	3	6	9	9	0	0	0	0	0	0	0	6	45
Latvia		Lielupe	4	4	2	8	4	2	2	0	2	0	2	4	0	0	34
Latvia			2	2	2	0	2	2	0	0	0	0	0	0	0	0	10
TOTAL																	221
		Sampling performed according to the original plan															
		Revised plan (please comment)															

Consumption data 2015-2017 for Finland, human and veterinary, for active pharmaceutical ingredients listed on CWPharma analysis list

No.	Compound	2015 (kg)	2016 (kg)	2017 (kg)	Comments on consumption data, list of relevant ATC codes, ATC code in bold means sales data for Finland is available 2015-17 ATC code in grey means no sales in Finland 2015-17 (no marketing authorization or product not marketed although a marketing authorization may exist)
		1.1 (pills) total amount of ethinylestradiol contained in plasters	1.0 (pills) total amount of ethinylestradiol contained in plasters	1.0 (pills) total amount of ethinylestradiol contained in plasters	Human use: G03AA15 chlormadinone and ethinylestradiol G03AB07 chlormadinone and ethinylestradiol
		0.07	0.07	0.06	
		total amount of ethinylestradiol contained in contraceptive rings	total amount of ethinylestradiol contained in	total amount of	

	A	B	C	D	E	F
936						QA10BD17 metformin and acarbose
937						QA10BD18 metformin and gemigliptin
938						QA10BD20 metformin and empagliflozin
939						QA10BD22 metformin and evogliptin
940						
941			8.24	14.48	27.2	Human use:
942	72	Florfenicol				No ATC code
943						Veterinary use:
944						QJ01BA90 florfenicol
945						QJ51BA90 florfenicol
946			931.33	728.05	691.65	Human use:
947	73	Tiamulin hydrogen fumarate				No ATC code
948						Veterinary use:
949						QJ01XQ01 tiamulin
950			142.01	80.82	44.36	Human use:
951						No ATC code
952	74	Tylosin				Veterinary use:
953						QJ01FA90 tylosin
954						QJ51FA90 tylosin
955			310.6	127.41	153.76	Human use:
956						J01FF02 lincomycin
957						Veterinary use:
958	75	Lincomycin				QJ01FF02 lincomycin
959						QJ01FF52 lincomycin, combinations
960						QJ51RF03 lincomycin, combinations with other antibacterials
961			38.87	43.16	58.23	Human use:
962						P02CA06 fenbendazole
963	76	Fenbendazole				Veterinary use:
964						QP02CA06 fenbendazole
965						QP52AC13 fenbendazole
966			45.57	43.79	50.32	Human use:
967						No ATC code

Finland

Sweden

Germany

Finland

Sweden

Germany

Latvia

Estonia

Poland

Lithuania_DDD

Darba paka 3 (WP3) - Uzlabota notekūdeņu attīrīšana, lai samazinātu farmaceitisko vielu klātbūtni

Notekūdeņu attīrīšana, pielietojot dažādas tehnoloģiskos risinājumus – ozonēšanu un aktivēto ogli:

- Linčepinga (Zviedrija)
- Kalundborga (Zviedrija)
- Berlīne (Vācija)
- Helsinki (Somija)

Attīrīšanas efektivitāti nosaka ķīmiski, kā arī izmantojot dažāda trofijas līmeņa organismus, ekotoksicitātes testos



Darba paka 4 (WP4) - Ne-tehniskie, izmaksu efektīvie pasākumi farmaceitisko vielu emisijas samazināšanā

- Zāļu utilizācija. Medikamentu savākšana/nodošana valstiskā līmenī (kā? cik daudz? kur nodot? Latvijas situācija/statistika???)
- Farmaceitisko produktu eko-marķēšana
 - ārsti, farmaceiti, zāļu patērētāji – vai būtu ieinteresēti, izvēloties videi draudzīgākus medikamentus????
 - Informatīvs buklets
- Vides atļaujas/starpnozaru vienošanās (MWWTP, Pharmaceutical WWTP)

Paldies!
www.cwpharma.fi/en

