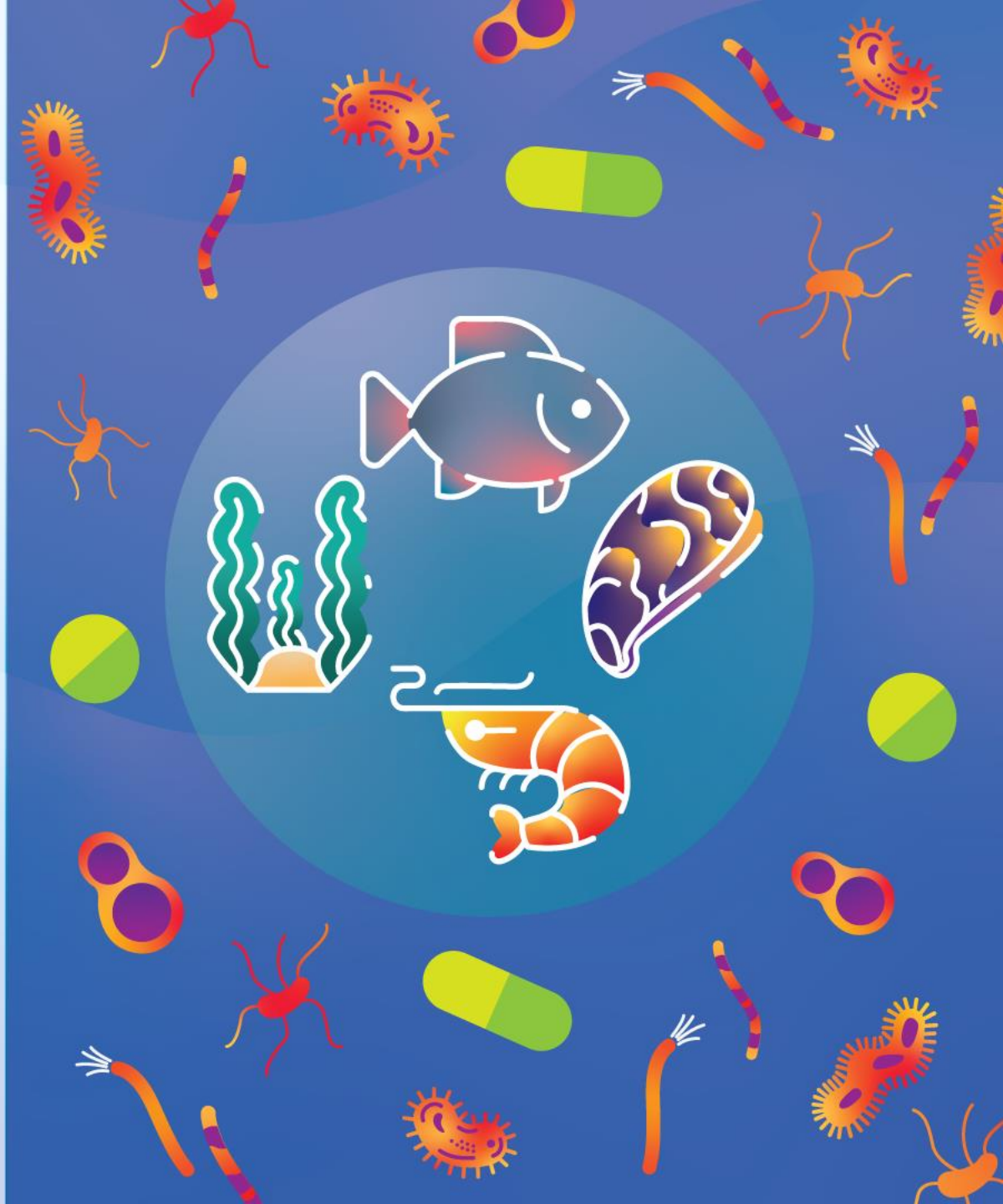
Food and Agriculture Organization of the United Nations

Import notifications for fisheries and aquaculture products with an AMR perspective

Esther Garrido Gamarro, Fishery Officer, FAO

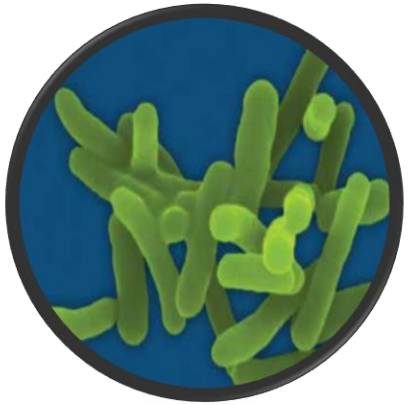
prepared in collaboration with Giulia Loi



Antimicrobial Resistance: AMR

- Antimicrobial resistance (AMR) is a major global threat of increasing concern to human and animal health.
- It also has implications for both **food safety** and **food security** and the **economic well** being of millions of farming households.
- **Food** plays an important role in the development and spread of AMR.
- The presence of AMR microorganisms in agricultural production systems and food chains is a potential route of exposure for everyone.

AMR and fish safety



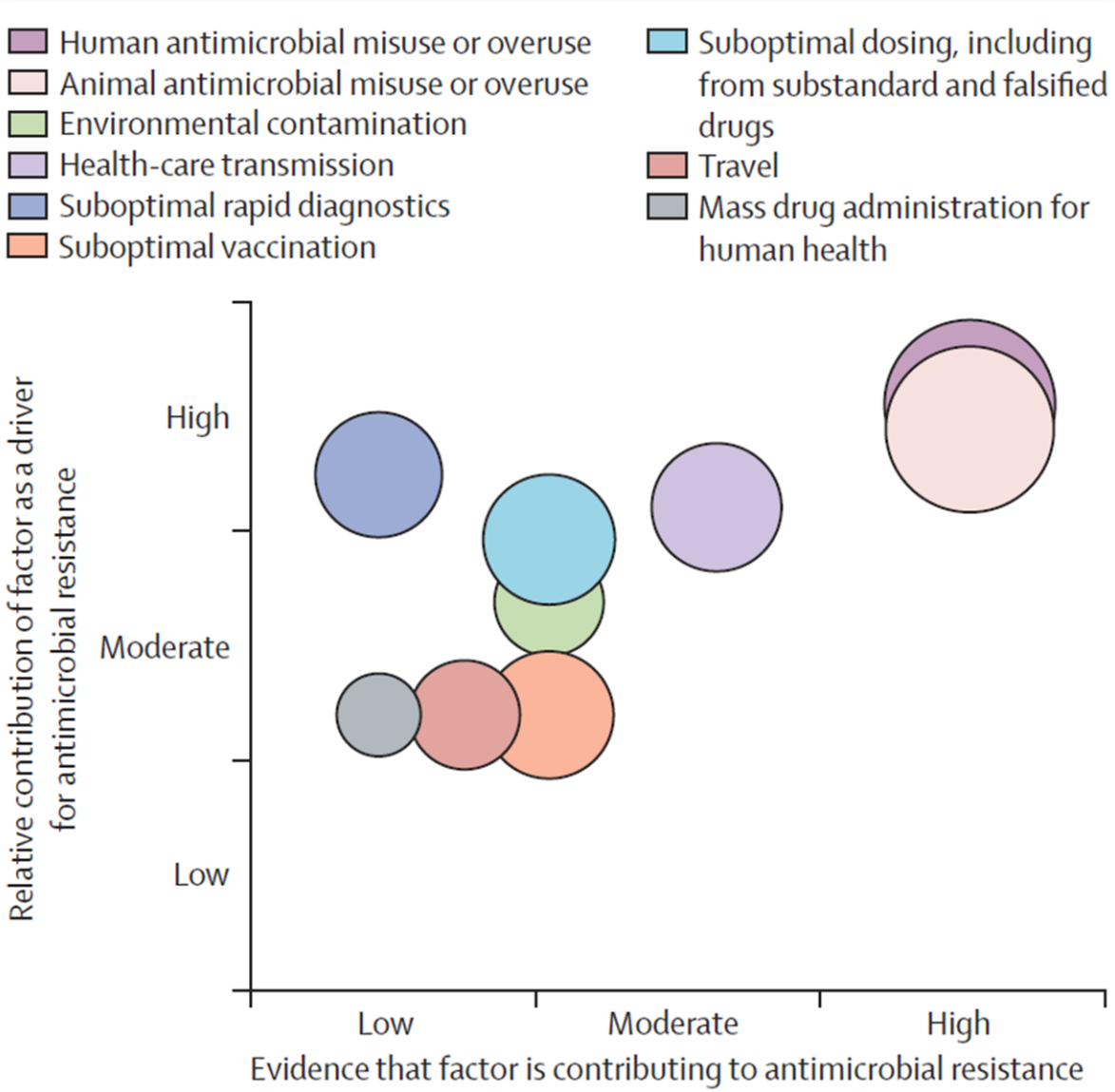
- Ingestion of AMR organisms via food can, if they are pathogenic, result in human illnesses that might not respond to available antibiotic or other treatments.

- Example: in freshwater fish, antibiotic resistance has been observed to tetracycline (90.71%) followed by ampicillin (70%) and amoxicillin-clavulanic acid (45%) in *Salmonella spp* (Elhadi, 2014).

What accelerates the emergence and spread of AMR?

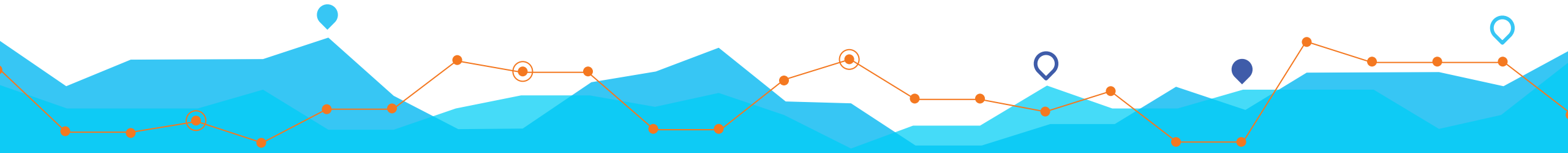
Poor infection control, inadequate sanitary conditions and misused of antimicrobials among others

Drivers for antimicrobial resistance



(Alison H Holmes, 2015)

Analysis of import notifications in fisheries and aquaculture products in the European Union, Japan and the United States of America



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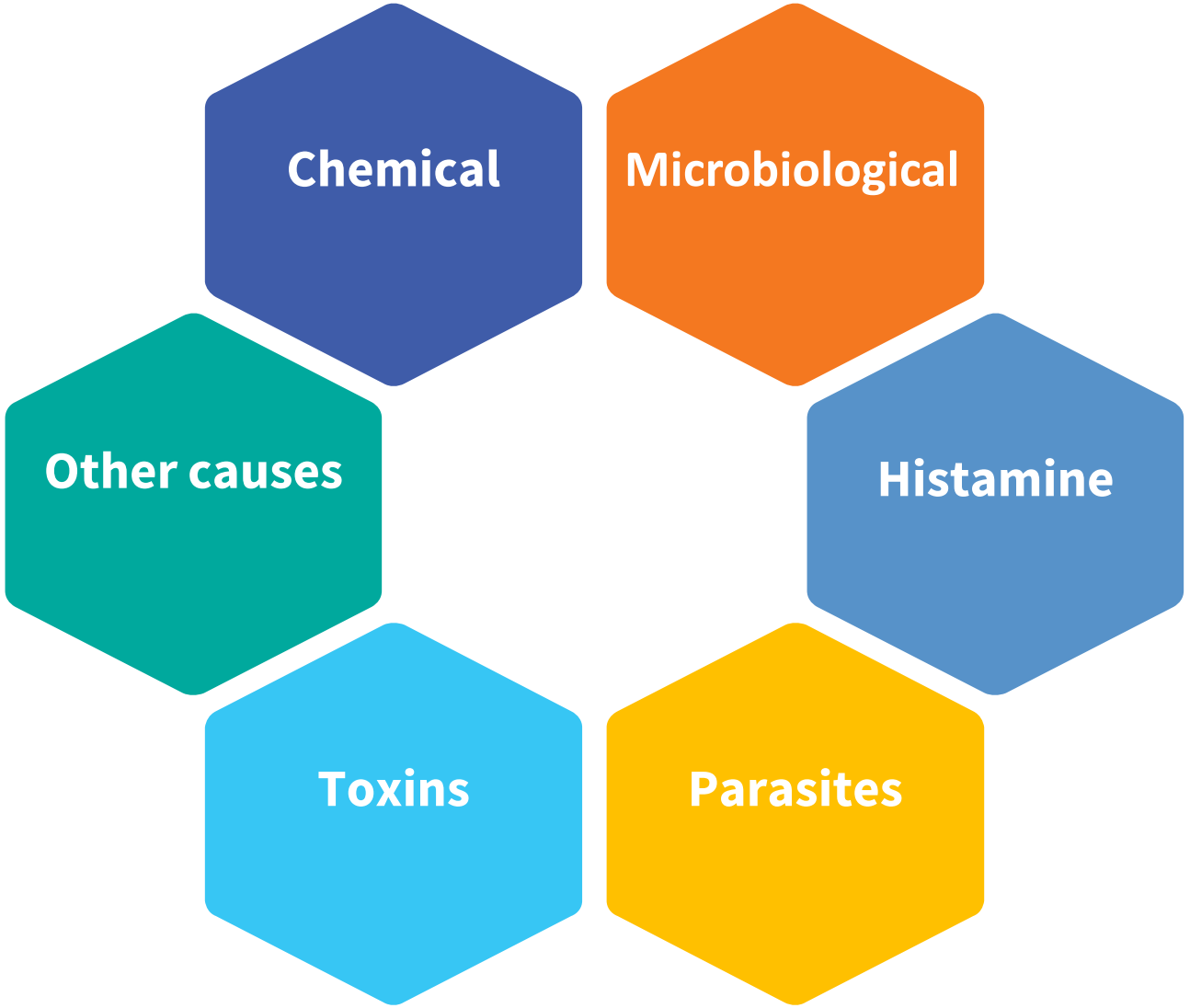
Classification of import notifications



Import notifications in the European Union

Trend analysis 2016 - 2022

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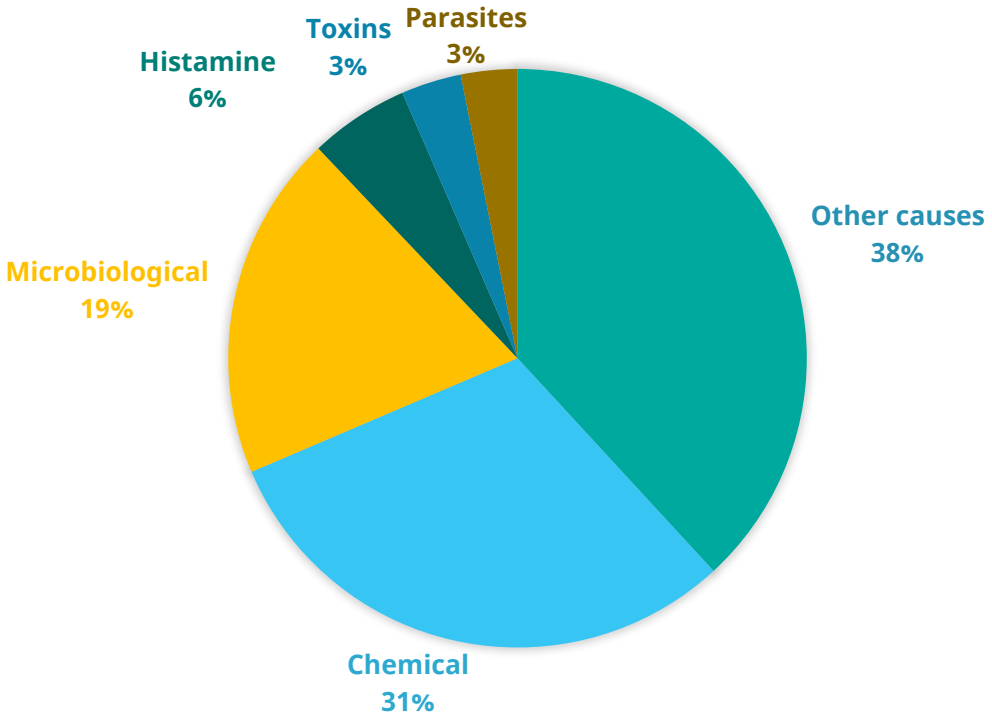
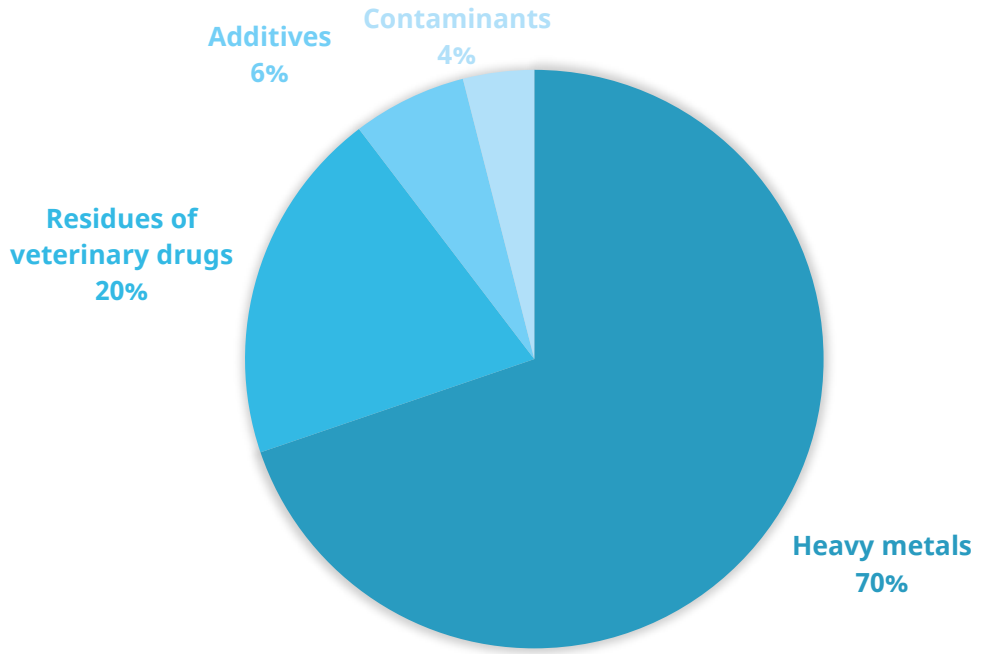


Source: European Commission, 2022



Source: European Commission, 2022

Under the residues of veterinary drugs, 62 import notifications of the total 74 cases were due to the presence of antimicrobials, representing 84 percent of the import notifications due to residues

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Import notifications due to the presence of antibiotics in the European Union

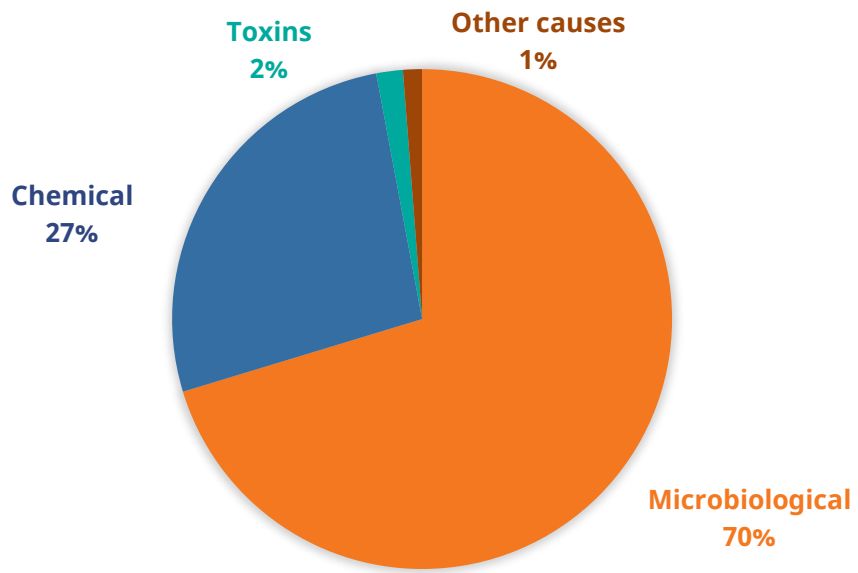
Notified antibiotic in the European Union	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*	*Total*
Nitrofurans	8	17	13	3	4	3	3	**51**
Chloramphenicol	1	2	0	1	1	1	0	**6**
Oxytetracycline	2	0	0	0	0	0	0	**2**
Doxycycline	1	0	0	0	0	0	0	**1**
Ofloxacin	0	0	1	0	0	0	0	**1**
Sulfadiazine	0	0	0	1	0	0	0	**1**
Total	**12**	**19**	**14**	**5**	**5**	**4**	**3**	**62**

Source: European Commission, 2022

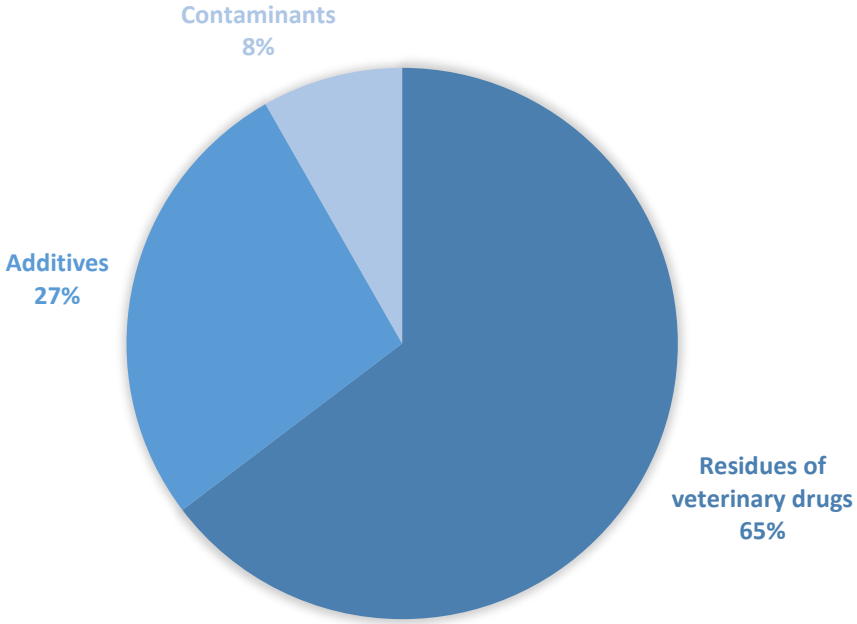
Import notifications in Japan

Trend analysis 2016 - 2022

Food and Agriculture Organization of the United Nations



Source: MHLW, 2022



Source: MHLW, 2022

*All the residues of veterinary drugs detected were antimicrobials, representing **100 percent** of the import notifications due to residues of veterinary drugs*

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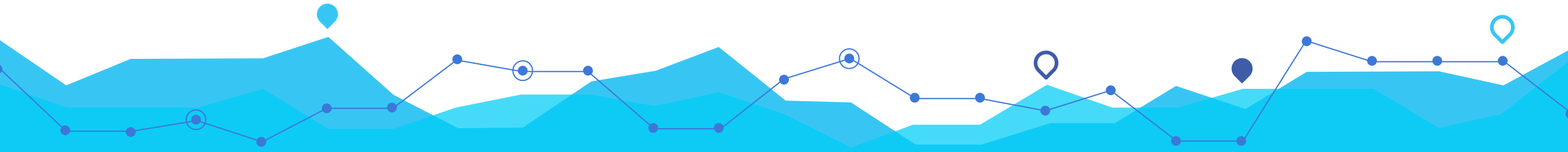
Import notifications due to the presence of antibiotics in Japan

	2016	*2017*	*2018*	*2019*	*2020*	*2021*	*2022*	*Total*
Enrofloxacin	13	11	7	8	8	6	9	**62**
Furazolidone	9	12	6	6	5	5	10	**53**
Sulfadiazine	6	3	1	0	0	0	0	**10**
Chloramphenicol	5	2	1	1	0	0	0	**9**
Tetracycline	0	3	0	0	0	0	0	**3**
Oxytetracycline	0	0	0	1	0	0	1	**2**
Sulfamethoxazole	1	0	0	0	0	0	0	**1**
Total	**34**	**31**	**15**	**16**	**13**	**11**	**20**	**140**

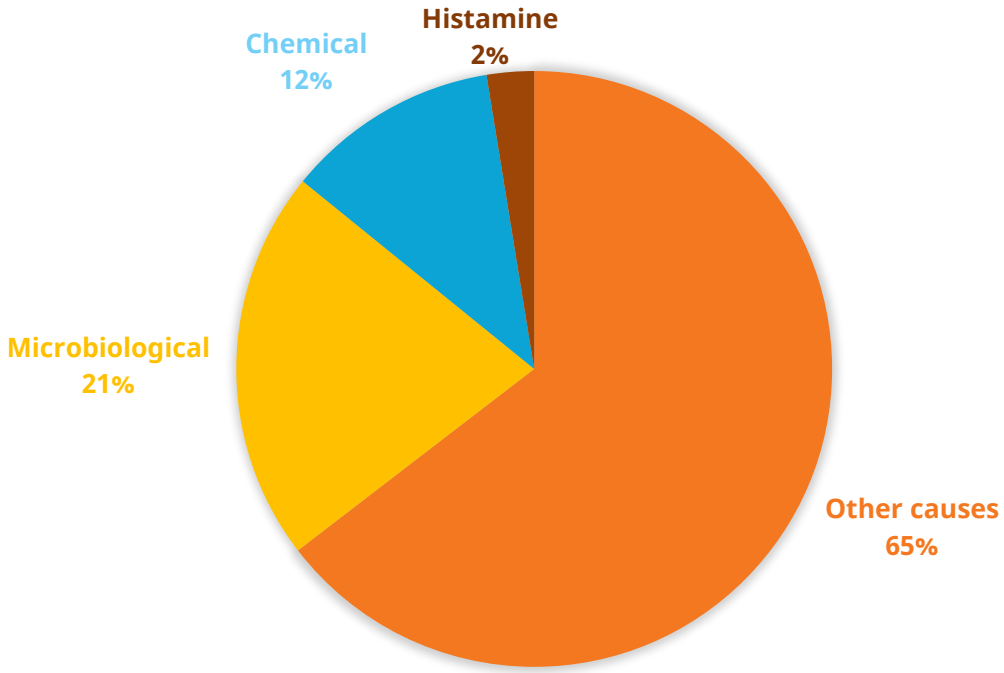
Source: MHLW, 2022



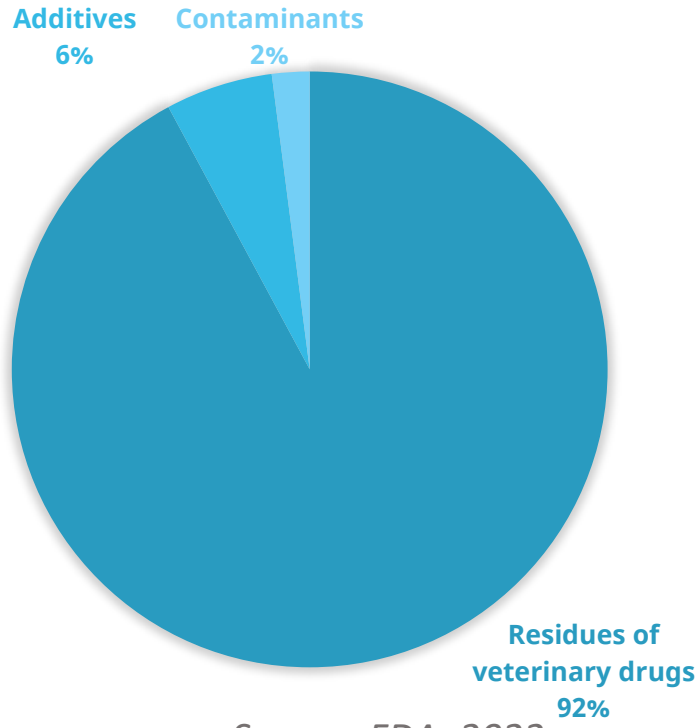
Import notifications in the United States of America

Trend analysis 2016 - 2022

Food and Agriculture Organization of the United Nations



Source: FDA, 2022



Source: FDA, 2022

Under the category of residues of veterinary drugs, antibiotics represent ***28 percent*** *of the import notifications due to residues*

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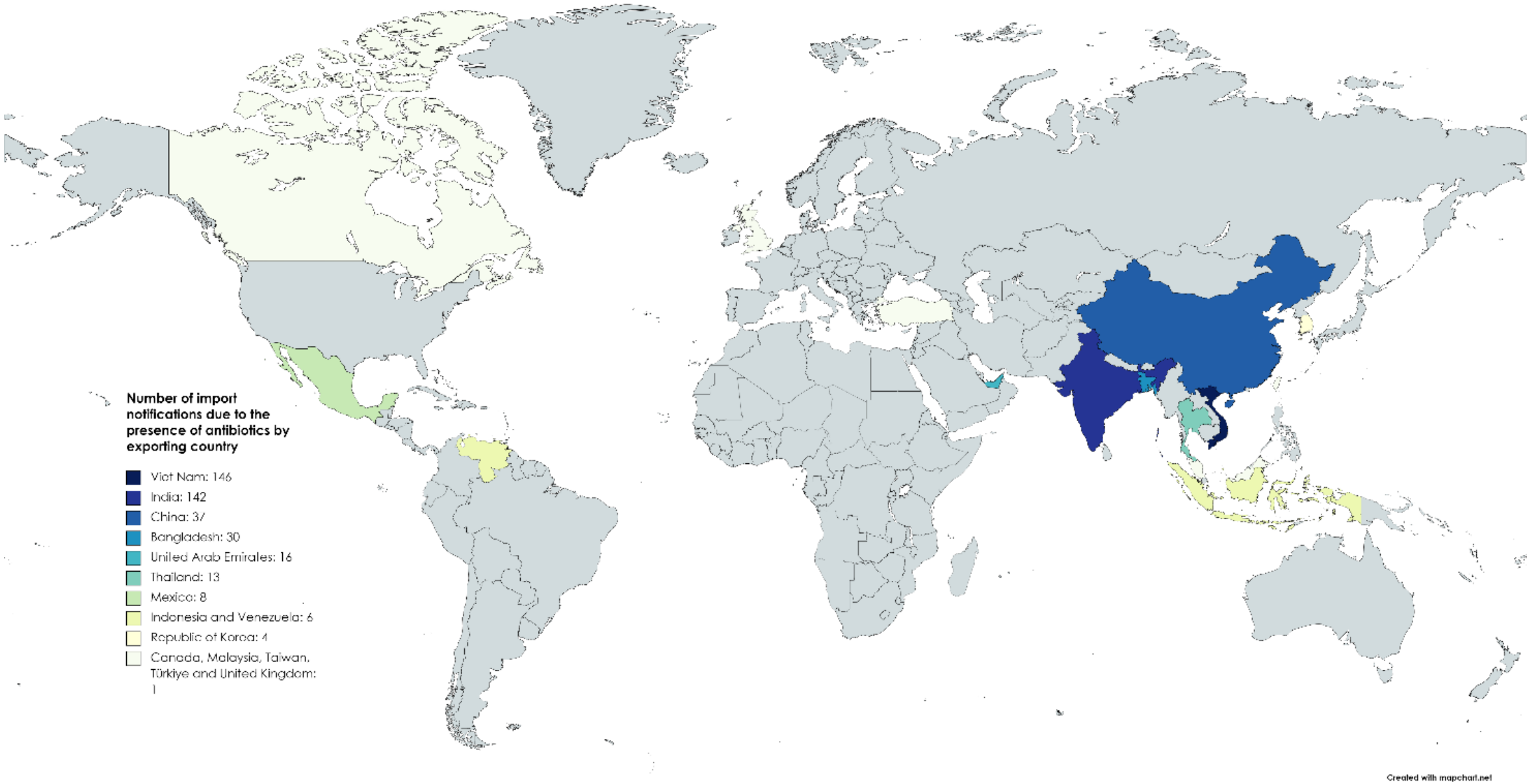
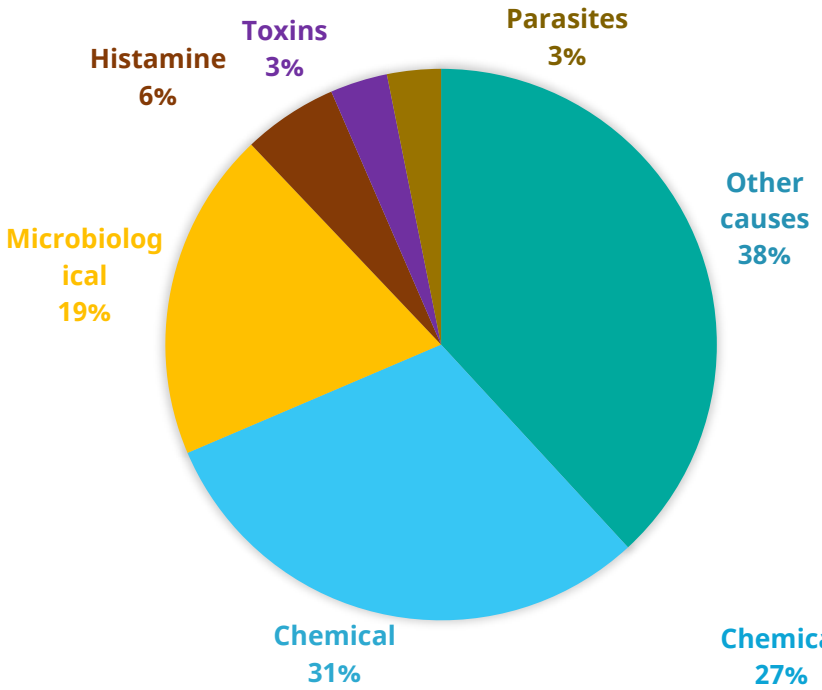
Import notifications due to the presence of antibiotics in the United States of America

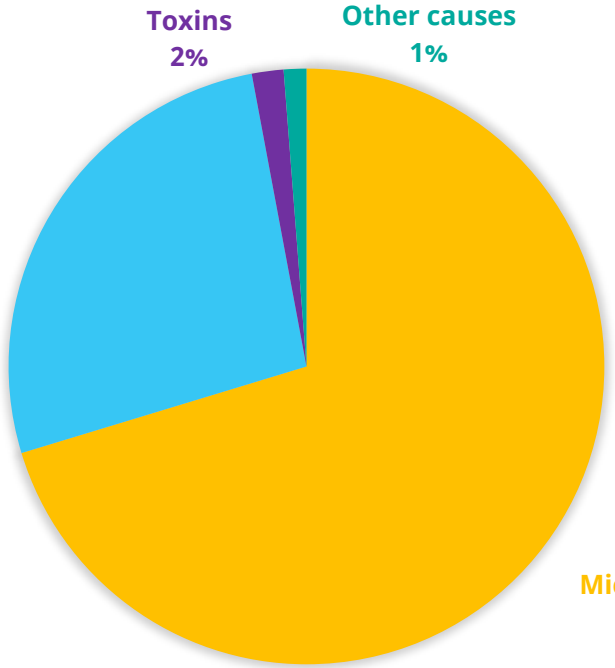
Notified antibiotic in the United States of America	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***	***2022***	***Total***
Nitrofurans	45	14	21	55	15	42	**33**	**225**
Chloramphenicol	19	10	3	5	5	0	**5**	**47**
Total	**64**	**24**	**24**	**60**	**20**	**42**	**38**	**272**

Source: FDA 2022

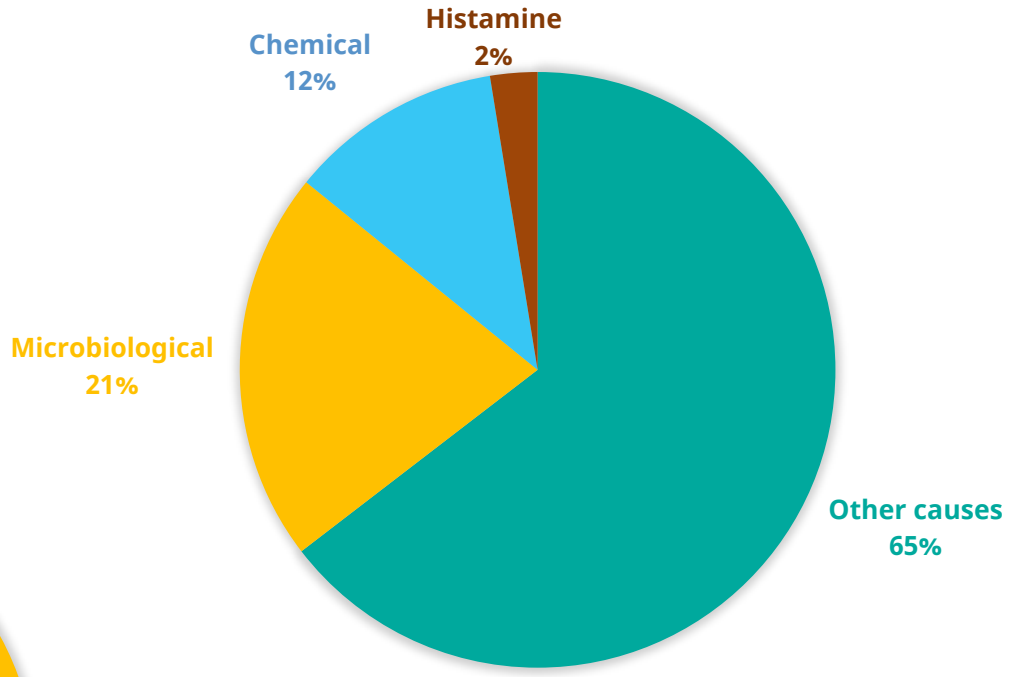

Number of import notifications due to the presence of antibiotics by exporting country
Viet Nam: 146
India: 142
China: 37
Bangladesh: 30
United Arab Emirates: 16
Thailand: 13
Mexico: 8
Indonesia and Venezuela: 6
Republic of Korea: 4
Canada, Malaysia, Taiwan, Türkiye and United Kingdom: 1
Created with mapchart.net



Source: European Commission, 2022



Source: MHLW, 2022



Source: FDA, 2022

Overall conclusions and recommendations

- Importance of a “One Health” approach
- Importance of harmonized standards for the use of antimicrobials and for the establishment of MRLs
- Need to reduce the use of antimicrobials
- Good aquaculture practices
- Alternative strategies (vaccinations, probiotics, bacteriophages and herbal extracts, etc.)

Codex Alimentarius

Reference	Title
CXC 61-2005	Code of Practice to Minimize and Contain Foodborne Antimicrobial Resistance
CXG 77-2011	Guidelines for Risk Analysis of Foodborne Antimicrobial Resistance
CXG 94-2021	Guidelines on integrated monitoring and surveillance of foodborne antimicrobial resistance

Reference	Title
CXM 2	Maximum Residue Limits (MRLs) and Risk Management Recommendations (RMRs) for Residues of Veterinary Drugs in Foods

Fisheries and Aquaculture

Statistics

- Statistical query panel
- Statistical collections
- Statistical software
- ARTFISH
- OPEN ARTFISH
- Calipseo
- FishStatJ
- WAPI
- Yearbook of Fishery Statistics

FishStatJ - Software for Fishery and Aquaculture Statistical Time Series

FishStatJ is a Windows and Mac application that anyone can use to access FAO's Fisheries and Aquaculture statistics. They include datasets on production, trade and consumption. Data can be extracted and aggregated according to different level of details and international standard classifications. It consists of a main application and several workspaces that include the datasets.

Related topics

- Statistics - Introduction

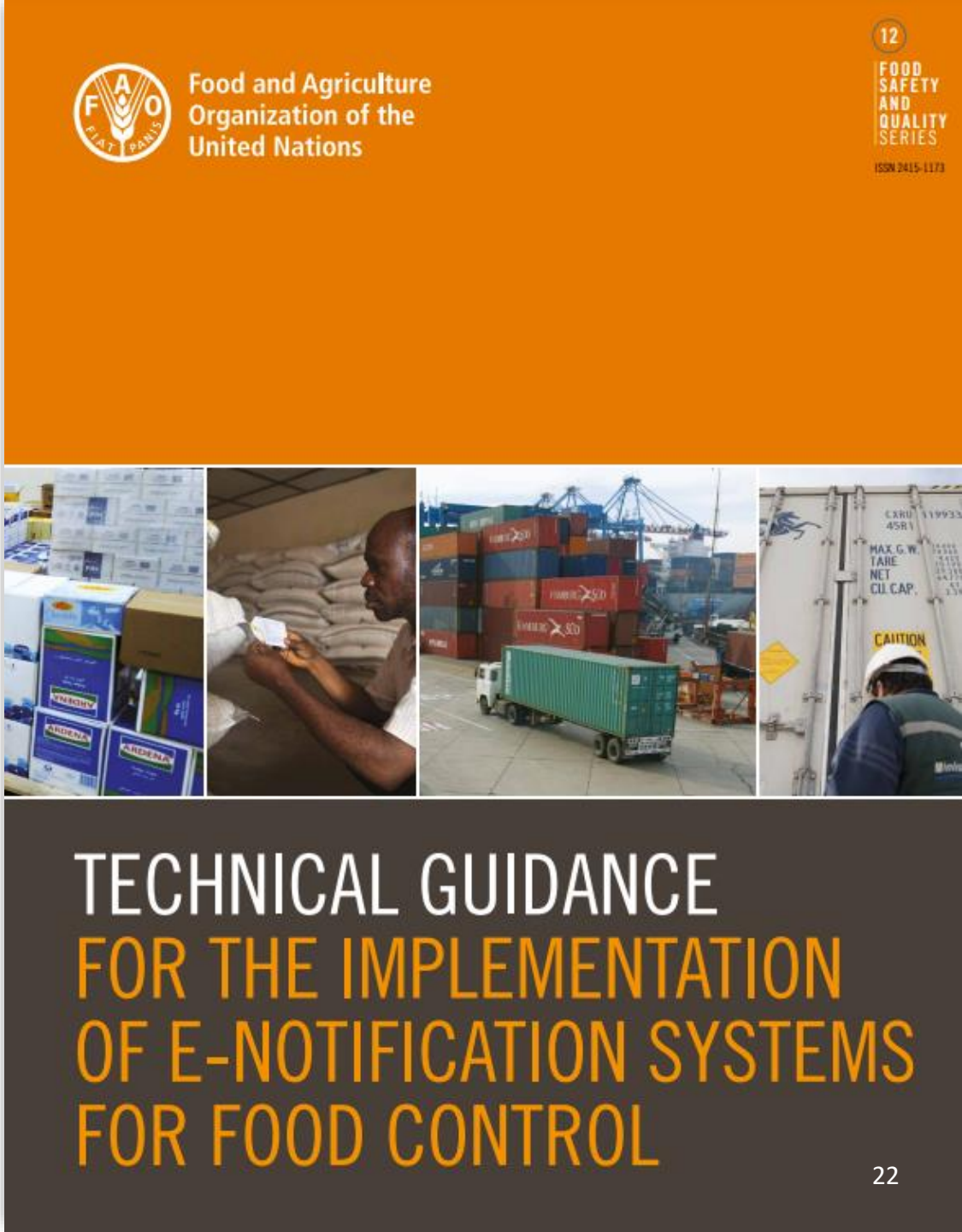
List of data available within FishStatJ:

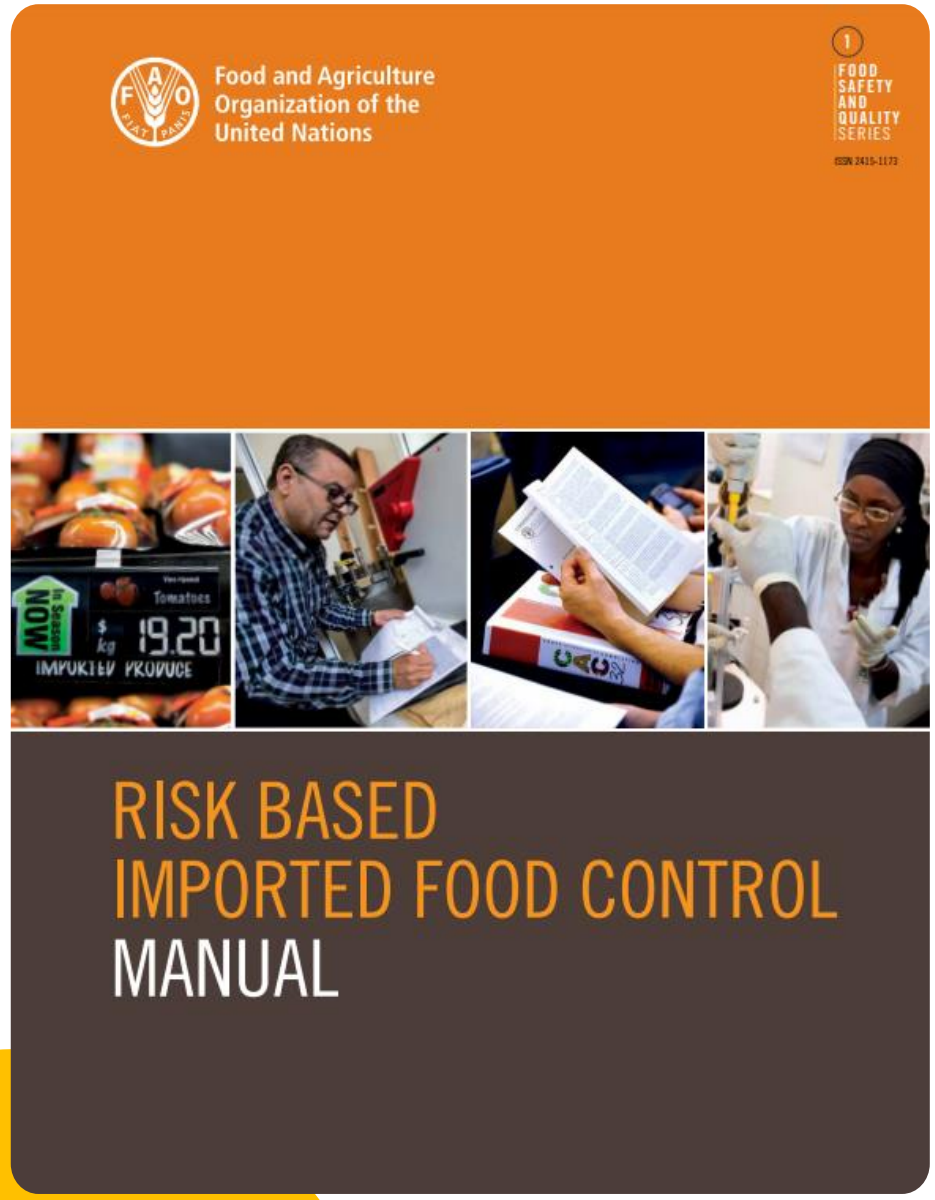
Global production workspace:

- Global Production by production source 1950-2021 (Release date: March 2023)
- Capture Production 1950-2021 (Release date: March 2023)
- Aquaculture Production (Quantities and values) 1950-2021 (Release date: March 2023)

- Provides guidance for the design and implementation of a food control e-notification system.

- Includes the system's legal basis, its structure and operational parameters, as well as its infrastructure and human resource requirements.





It aims at supporting competent authorities in improving the effectiveness of the control measures they are overseeing, based on an analysis of their specific country situation.

It discusses the different types of approach to managing risks related to imported food, and provides concrete illustrations of how Codex guidelines can be implemented in different ways.

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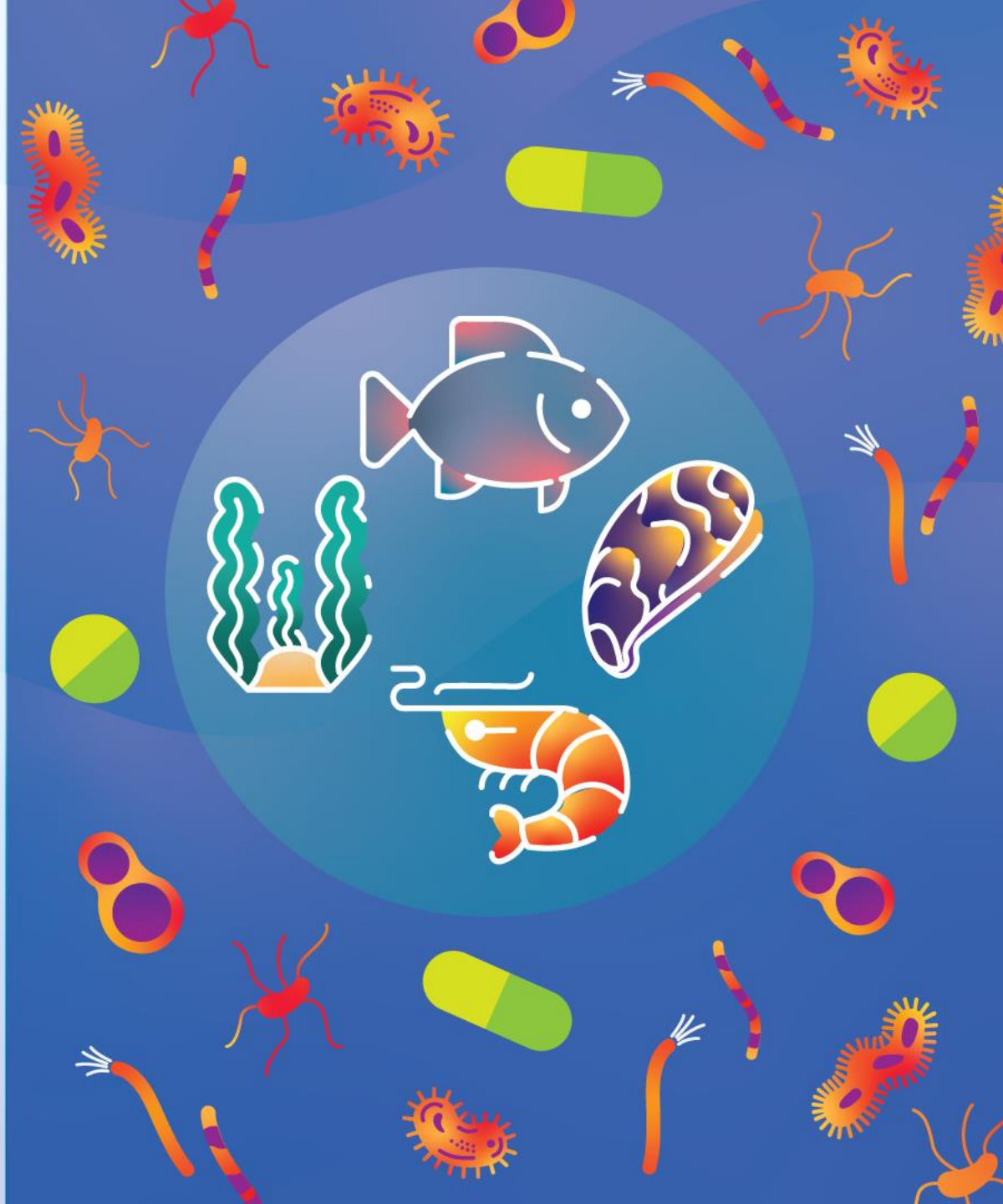
Thank you for your attention!

Any questions?

Esther Garrido Gamarro, Fishery Officer, FAO

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