

BEMEFA - Sector based monitoring plan 2016 – Results



Version 1 – may/june 2017

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Index



Introduction

- Global overview
- Planning
- Realised vs planned analyses

Results 2016

- Level 1
- Level 2
- Level 3



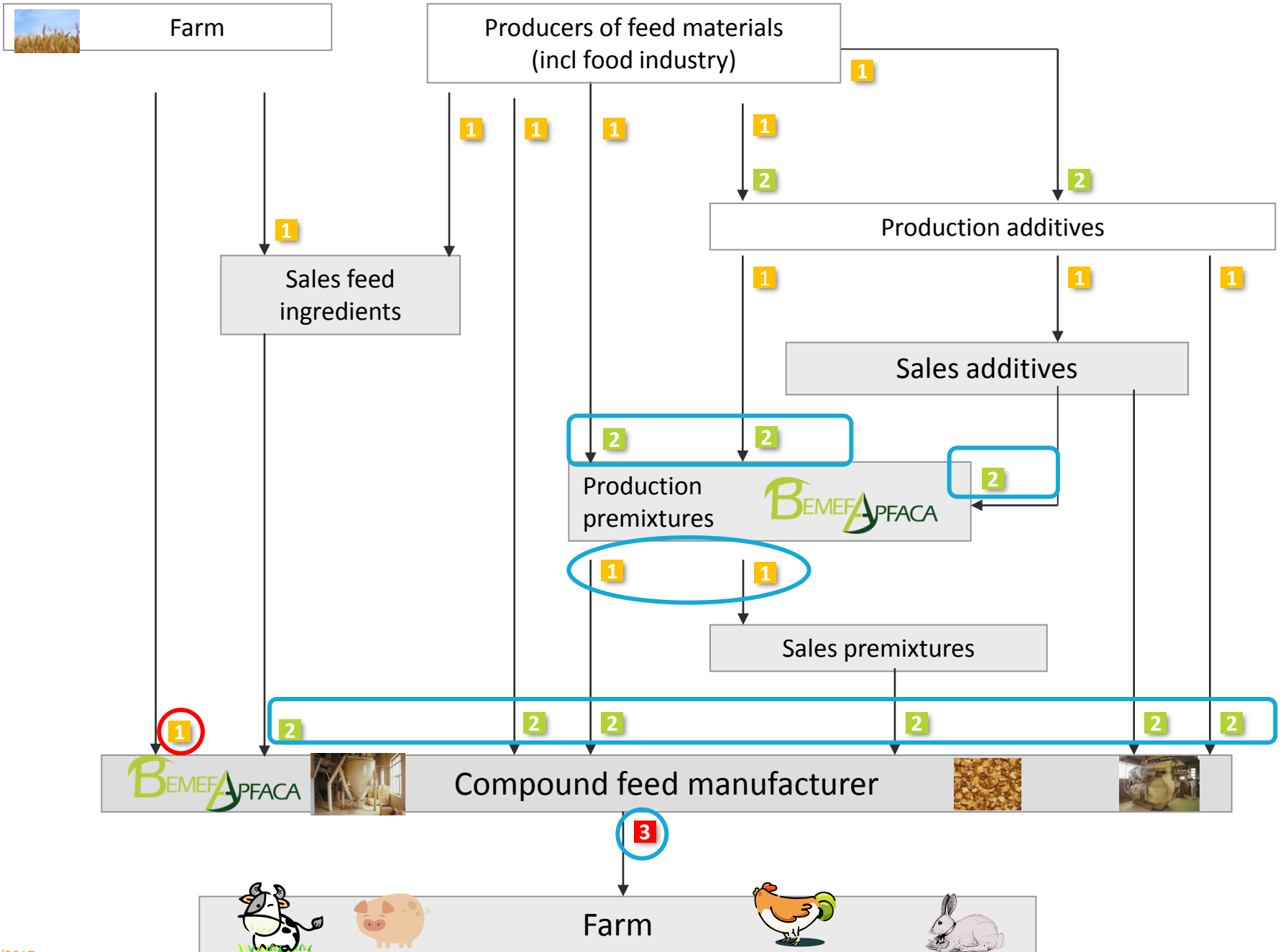
Introduction

- Global overview
- Planning
- Realised vs planned analyses



Monitoring plan 2016 – OVERVIEW DIFFERENT LEVELS

- **LEVEL 1:** 1
 - Production Premixtures
 - Production Feed Materials – cereal flakes *NEW*
- **LEVEL 2:** Purchase – certified source 2
 - *Additives (A)*
 - *Feed materials (FM)*
 - *Premixtures (PreM)*
 - *Mineral feed (purchase)*
- **LEVEL 3:** Compound feed production 3
 - *Compound feed production (CF)*
 - *Mineral feed production*



Monitoring plan 2016 – GLOBAL OVERVIEW

- **253** participants = establishment units
cf. Plan 2015: 261 participants
- **2067** analyses planned at the start of the Plan
- **2096** analyses realised → **101%**
cf. Plan 2015: 101%
 - **68** analyses initially planned, have not been realised = only 3.3% !
→ **GOOD PERFORMANCE : 97% !**
 - **97** analyses additionally planned during the year
(production cereal flakes, salmonella, ambrosia, PAHs,...)

Monitoring plan 2016 – GLOBAL OVERVIEW

- **2096** realised analyses



~ > **133 000 results**

if the parameters, belonging to 1 analysis,
have been counted individually:

- ✓ pesticides: 448 parameters
- ✓ mycotoxins: 11 parameters
- ✓ heavy metals: 4 or 5 parameters
- ✓ antibiotics residues: 12 parameters
- ✓ dioxins and dioxin-like PCBs: 3 parameters



MONITORING PLAN 2016 – GLOBAL OVERVIEW

(incl additional monitoring, analyses on advice of WG HACCP, plan China)

	Premixes	TOTAL LEVEL 1	Additives	Feed materials	Premixes	Mineral feed (purchase)	TOTAL LEVEL 2	Compound feed	Mneral feed (production)	TOTAL LEVEL 3	TOTAL
4 heavy metals (As, Cd, Hg, Pb)	59	59	35	48	19	3	105		144	144	308
5 heavy metals (As, Cd, Hg, Pb, F)				33			33				33
Ambrosia				23			23				23
Antibiotics				14			14				14
Hydrocyanic acid				43			43				43
Chloramphenicol			11				11				11
Dioxins and dioxinlike PCBs (other matrices) - day + 3			69	58	19	3	149				149
Dioxins and dioxinlike PCBs (fats & oils) - day + 2				40			40				40
Enterobacteriaceae				5			5				5
OGM			6				6				6
Melamine			19	26			45				45
Ergot				20			20				20
Mycotoxins (incl. aflatoxin B1)				362			362	149		149	511
Aflatoxin B1				58			58				58
Insoluble impurities				12			12				12
PAHs				67			67				67
PCB - animal fat				30			30				30
PCB 24h - other matrices			29	36	19	3	87				87
Pesticides			22	254			276				276
Paraquat				11			11				11
Glyphosate				11			11				11
Salmonella				122			122	149		149	271
Fungi				36			36				36
TOTAL	59	59	191	1309	57	9	1566	298	144	442	2067
	LEVEL 1		LEVEL 2				LEVEL 3				

OVERVIEW MONITORING PLAN 2016 – REALISED ANALYSES

sBMP BEMEFA 2016	# analyses planned				# analyses realised			
	LEVEL 1	LEVEL 2	LEVEL 3	TOTAL	LEVEL 1	LEVEL 2	LEVEL 3	TOTAL
4 heavy metals (As, Cd, Hg, Pb)	59	105	144	308	59	103	143	305
5 heavy metals (As, Cd, Hg, Pb, F)		33		33		34		34
Ambrosia		23		23		28		28
Antibiotics		14		14		12		12
Hydrocyanic acid		43		43		43		43
Chloramphenicol		11		11		11		11
Dioxins and dioxinlike PCBs (other matrices) - day + 3		149		149		141		141
Dioxins and dioxinlike PCBs (fats & oils) - day + 2		40		40		39		39
Enterobacteriaceae		5		5		5		5
OGM		6		6		7		7
Melamine		45		45		44		44
Ergot		20		20		15		15
Mycotoxins (incl. aflatoxin B1)		362	149	511	41	355	146	542
Aflatoxin B1		58		58		55		55
Insoluble impurities		12		12		5		5
PAHs		67		67		71		71
PCB - animal fat		30		30		30		30
PCB 24h - other matrices		87		87		86		86
Pesticides		276		276	13	264		277
Paraquat		11		11		11		11
Glyphosate		11		11		10		10
Salmonella		122	149	271		129	160	289
Fungi		36		36		36		36
TOTAL	59	1566	442	2067	113	1534	449	2096

Results

- Level 1
- Level 2
- Level 3



Results

- Level 1
- Level 2
- Level 3



LEVEL 1

OVERVIEW

- **Feed materials (cereal flakes) – production**
 - Mycotoxins
 - Pesticides

- **Premixes – production**
 - Heavy metals



LEVEL 1

OVERVIEW

- **Feed materials** (cereal flakes) – production
 - Mycotoxins
 - Pesticides
- **Premixes** – production
 - Heavy metals

A green, starburst-shaped badge with a white border containing the word 'NEW' in white capital letters.

NEW

LEVEL 1

Mycotoxins

FEED MATERIALS - production

Mycotoxins : Planned: 41 → realised: **41**

REMARK: Mycotoxin-analysis
= DON + ZEA + OTA + FUM B1 / B2, T2 / HT2
+ AFLA B1
+ AFLA B2 / G1 / G2

LEVEL 1

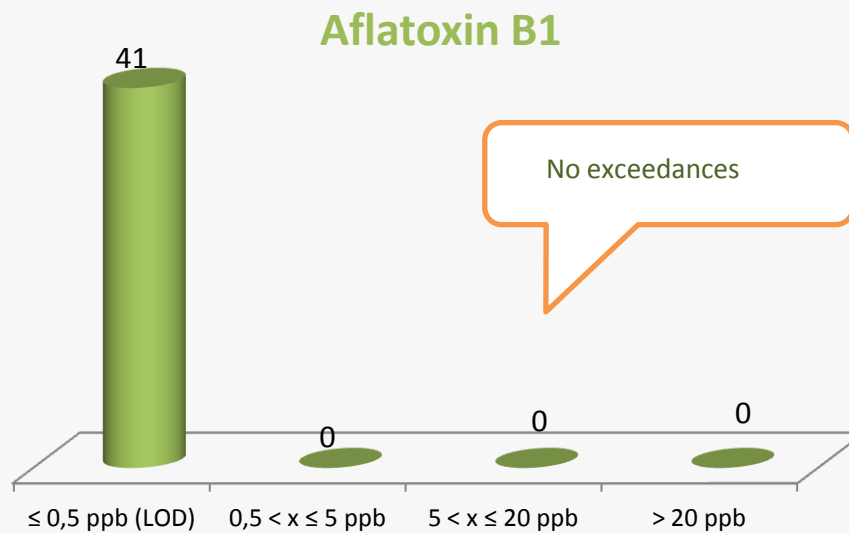
Mycotoxins

- AFLATOXIN B1**



Standard (RL 2002/32) feed materials: 20 ppb

REMARK: *feed materials for dairy feed or feed materials directly to the farmer: 5 ppb*



LEVEL 1

Mycotoxins

- AFLATOXIN B2 / G1 / G2**



No legislation

AFLATOXIN B2	#
≤ 0,5 ppb (LOD)	41
< 0,5 ppb	0
	41

AFLATOXIN G1	#
≤ 0,5 ppb (LOD)	41
< 0,5 ppb	0
	41

AFLATOXIN G2	#
≤ 0,5 ppb (LOD)	41
< 0,5 ppb	0
	41

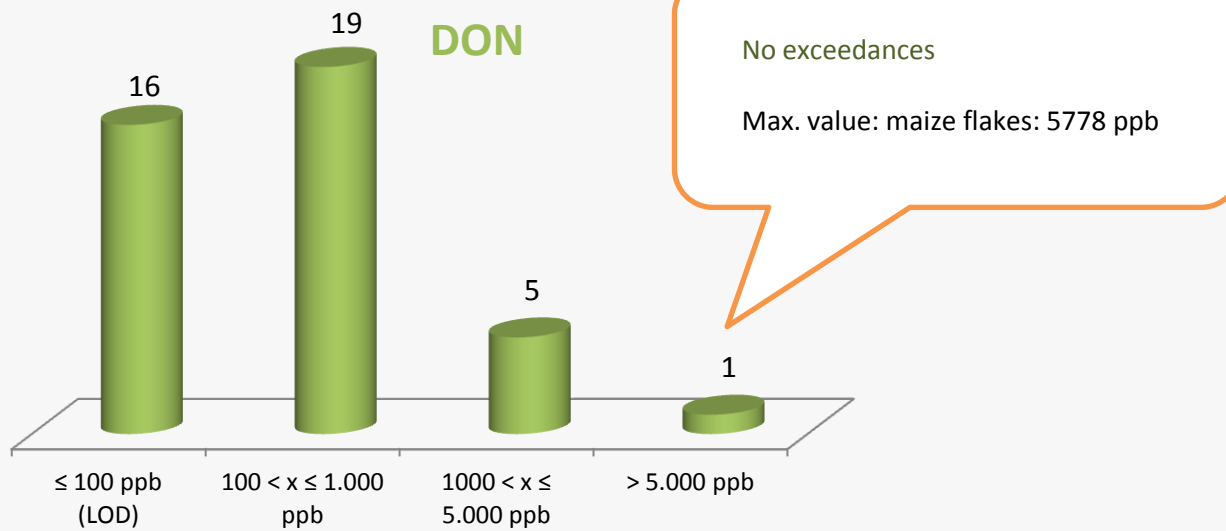
LEVEL 1

Mycotoxins

- DON (deoxynivalenol)**

Recommendation 2006/576 → guidance value:


- grain and grain products: 8000 ppb
- maize by-products: 12 000 ppb



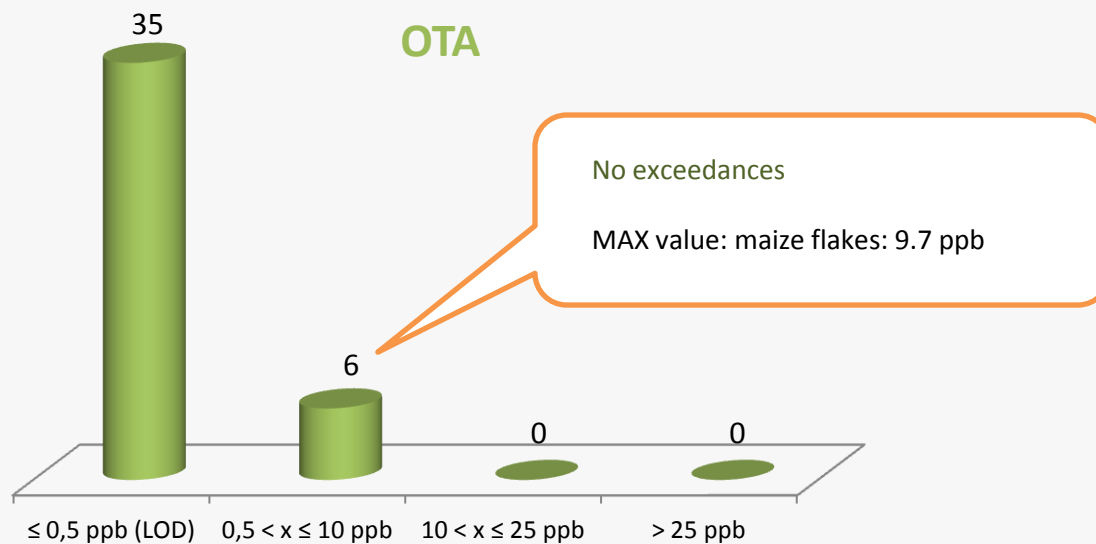
LEVEL 1

Mycotoxins

- **OTA (ochratoxine A)**

 Recommendation 2006/576 → guidance value:

- grain and grain products: 250 ppb



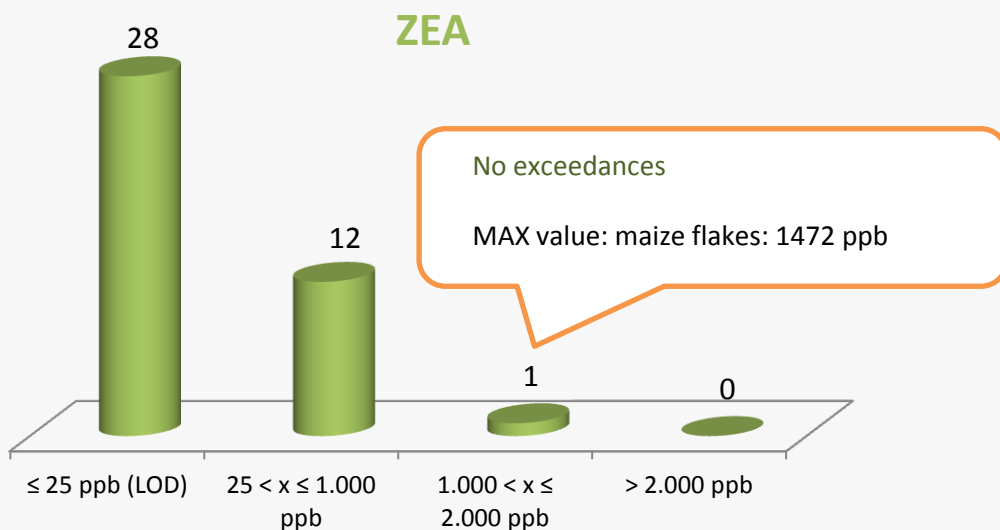
LEVEL 1

Mycotoxins

- ZEA (zearalenon)**

Recommendation 2006/576 → guidance value:

- grain and grain products: 2000 ppb
- maize by-products: 3000 ppb

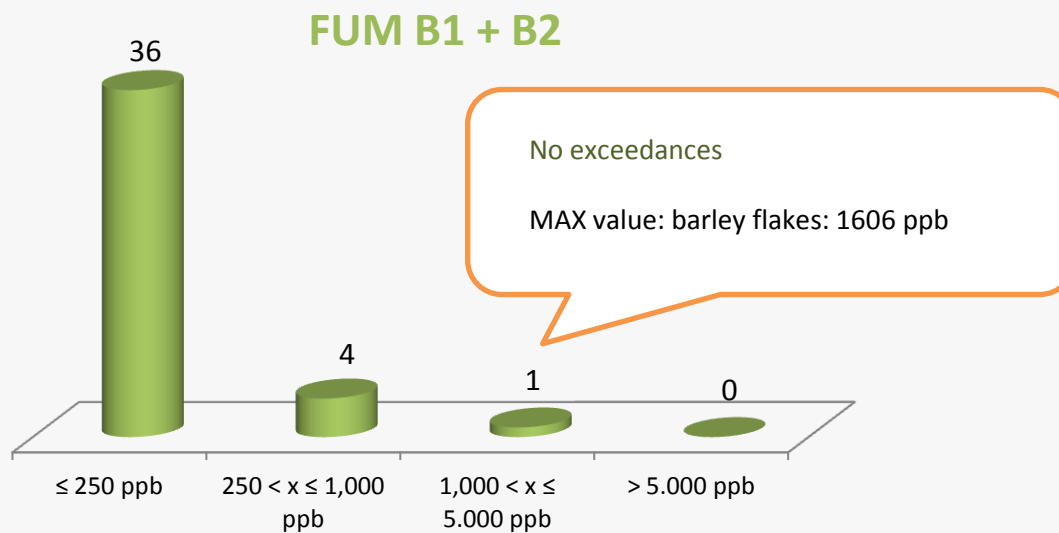


LEVEL 1

Mycotoxins

- FUM B1 + FUM B2 (Fumonisin)**

 Recommendation 2006/576 → guidance value:
maize and maize by-products: 60 000 ppb



LEVEL 1

Mycotoxins

• T2, HT2



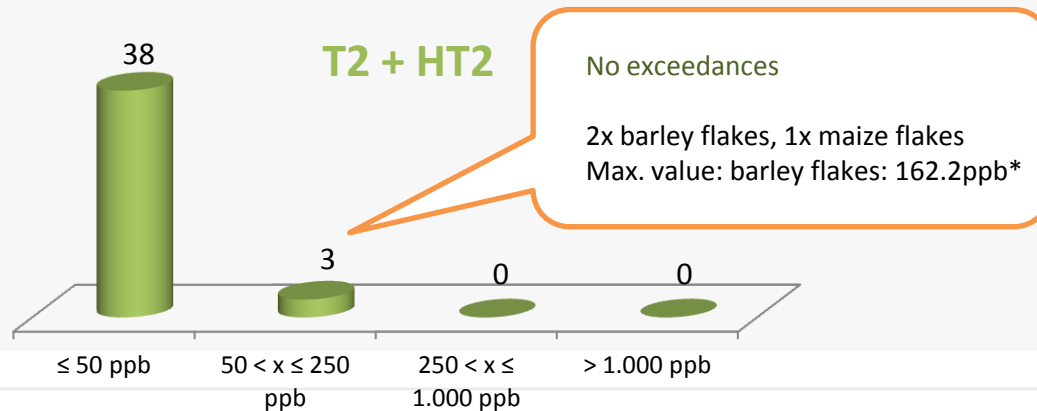
Recommendation 2013/165: **T2+HT2**

non-processed grain

- *barley and corn: 200 ppb*
- *Oats: 1000 ppb*
- *Wheat, rye and other grain: 100 ppb*

grain products for animal feed and compound feed

- *milling products from oats (husks): 2000 ppb (oat peels)*
- *other grain products: 500 ppb*
- *compound feed: 250 ppb*



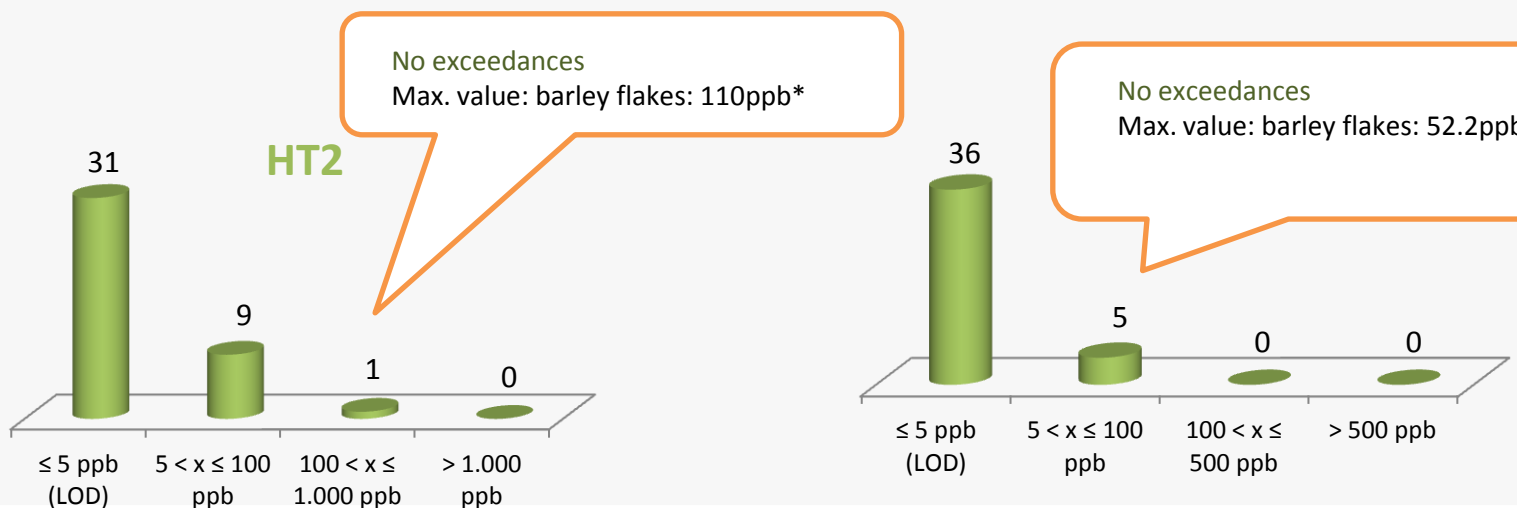
LEVEL 1

Mycotoxins

• T2, HT2

Action limits FAVV: FEED T2/HT2

- Compound feed poultry: 400 ppb
- Compound feed fattening pigs: 500 ppb
- Compound feed piglets: 200 ppb
- Compound feed calves: 200 ppb



LEVEL 1

OVERVIEW

- **Feed materials** (cereal flakes) – production
 - Mycotoxins
 - Pesticides
- **Premixes** – production
 - Heavy metals

A green, starburst-shaped badge with a white border and the word 'NEW' in white capital letters.

NEW

LEVEL 1

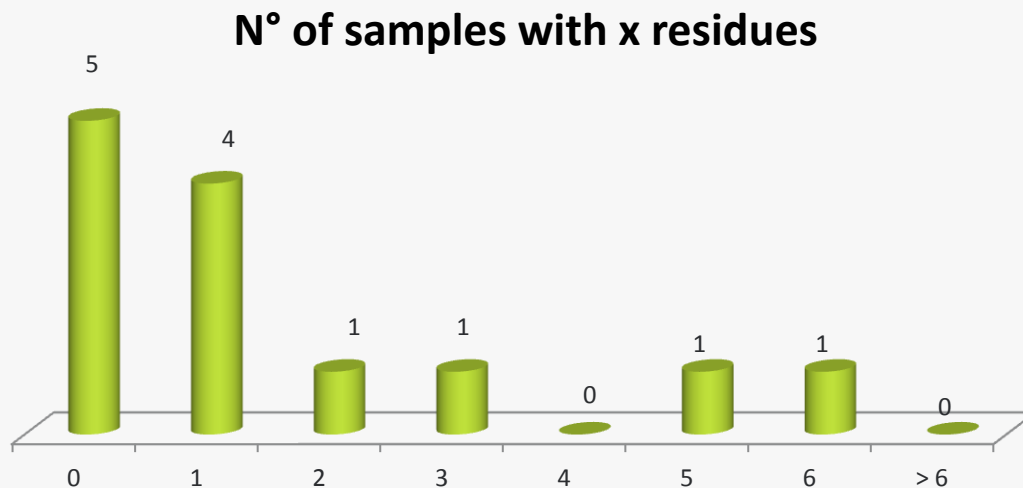
Pesticides

FEED MATERIALS - production

- **Pesticides**

✓ 13 samples:

- In **5** samples **no pesticide residue** was detected
- In **8** samples **at least 1 pesticide residue** was detected



LEVEL 1

Pesticides

FEED MATERIALS - production

- Pesticides

N° pesticides found (x)	N° samples in which x pesticides were found	Pesticides	Feedstuffs
0	5		
1	4	2x chloorpyrifos-methyl, cyprodinil, <i>piperonyl-butoxyde</i>	2x barley flakes, 2x maize flakes
2	1	deltamethrin, <i>piperonyl-butoxyde</i>	wheat flakes
3	1	bixafen, fluxapyroxad, tebuconazole	spelt flakes
4	0		
5	1	bixafen, chloorpyrifos-methyl, cypermethrin, <i>piperonyl-butoxyde</i> , pirimifos-methyl	barley flakes
6	1	bixafen, chloorpyrifos-methyl, cypermethrin, <i>piperonyl-butoxyde</i> , pirimifos-methyl, deltamethrin	barley flakes
> 6	0		
	13		

LEVEL 1

OVERVIEW

- **Feed materials (cereal flakes) – production**
 - Mycotoxins
 - Pesticides

- **Premixes – production**
 - Heavy metals

LEVEL 1

Heavy metals

Planned: 59 → Realised: 59

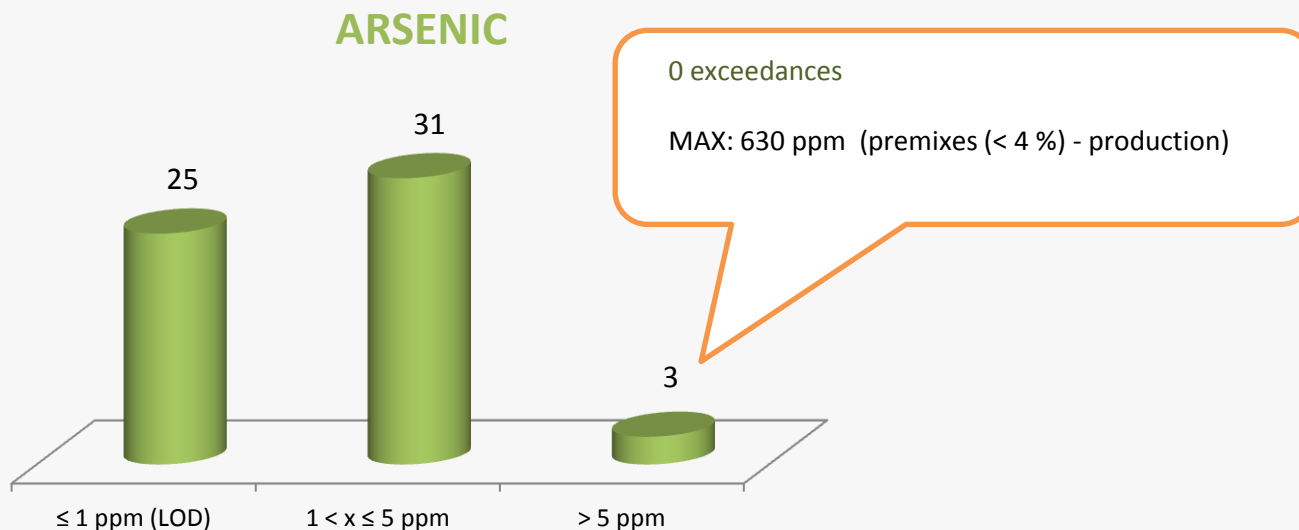
- **ARSENIC**



Directive 2002/32

No standard for premixes;

Standard complete animal feed: 2 ppm (+ exceptions)



LEVEL 1

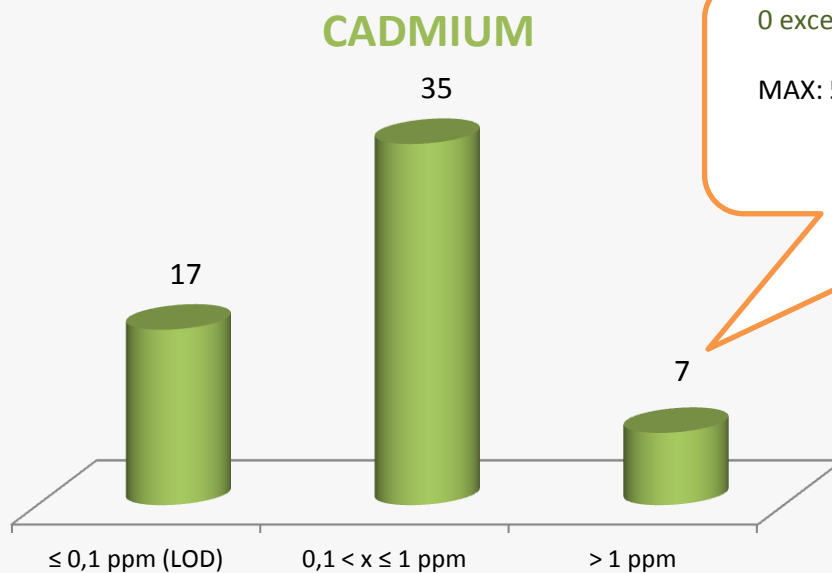
Heavy metals

- CADMIUM**



Directive 2002/32

Standard premixes: 15 ppm



0 exceedances

MAX: 5.5 ppm (premixes (< 4 %) - production)

LEVEL 1

Heavy metals

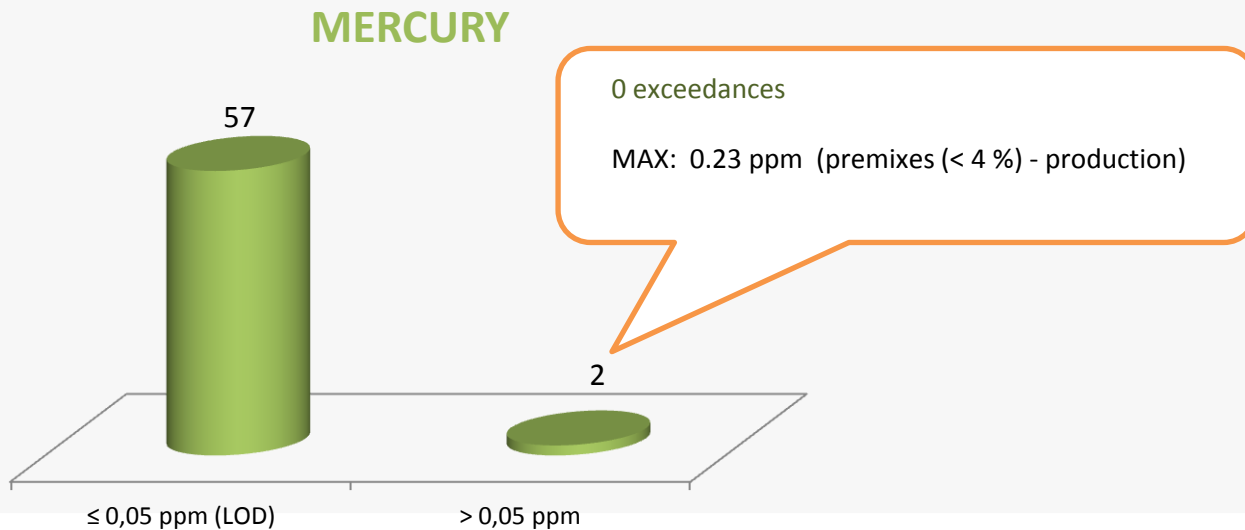
- MERCURY**



Directive 2002/32

No standard premixes

Standard compound feed: 0.1 ppm (+ exceptions)



LEVEL 1

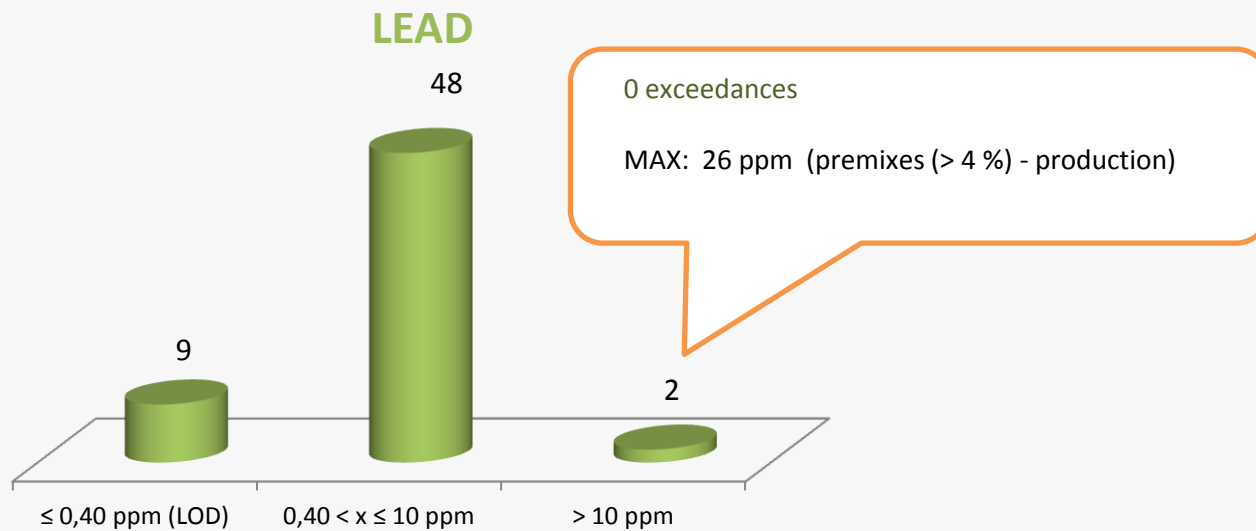
Heavy metals

- LEAD**



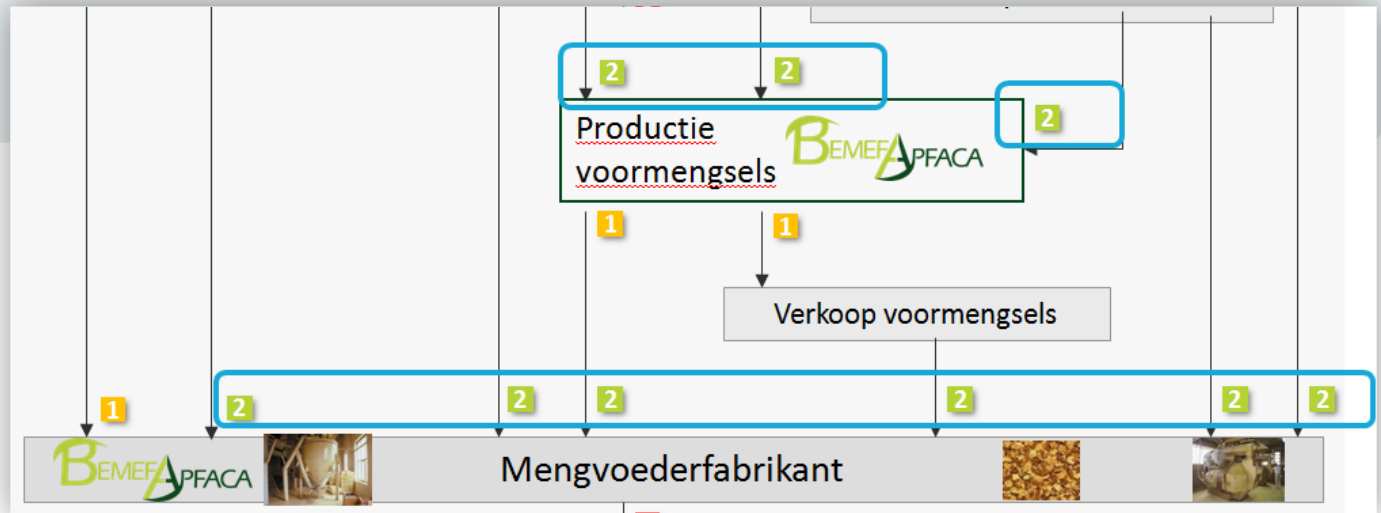
Directive 2002/32

Standard premixes: 200 ppm



Results

- Level 1
- **Level 2**
- Level 3



LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Heavy metals

FEED MATERIALS – purchase

4 heavy metals: Planned : 49 → Realised: **47**

5 heavy metals : Planned : 33 → Realised : **34**

As, Cd, Hg, Pb: 47 + 34 = 81 results

F: 34 results

LEVEL 2

Heavy metals

• ARSENIC



Directive 2002/32: standard feed materials: 2 ppm – exceptions!

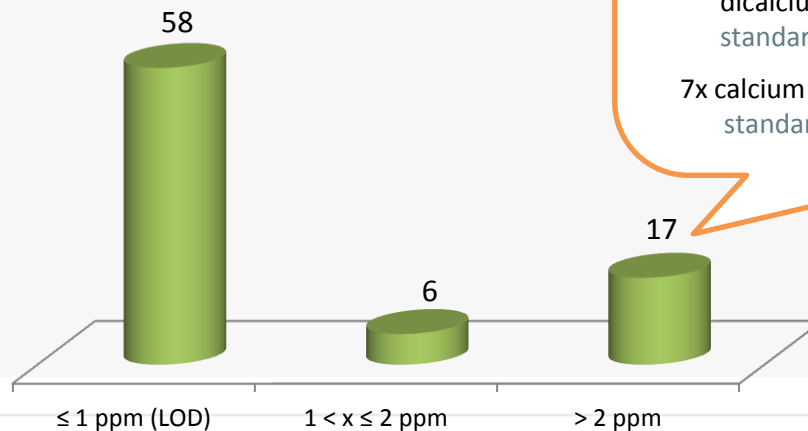
i.g. Fish meal: 25 ppm

Phosphates: 10 ppm

Calcium carbonate: 15 ppm

Magnesium oxide: 20 ppm

ARSENIC



0 exceedances

1 x fish meal(Scandinavian)
standard 25 ppm - result 4.5 ppm

9x phosphates(mono-calciumphosphate,
magnesiumphosphate, mono-di-calciumphosphate,
dicalciumphosphate)
standard 10 ppm - MAX result 6.5 ppm

7x calcium carbonate/chalk/oyster shells/sea shell grit
standard 15 ppm - MAX result 6.4 ppm

LEVEL 2

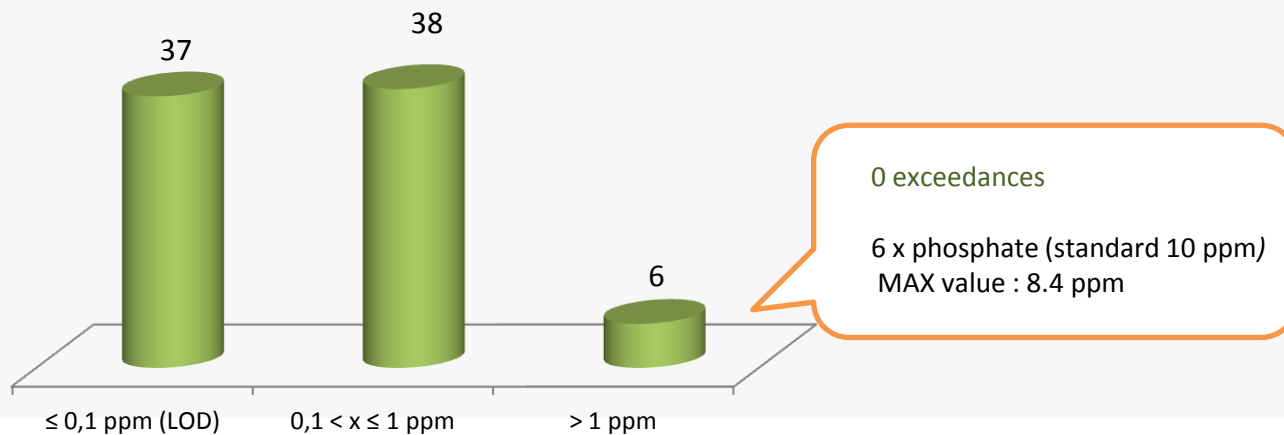
Heavy metals

• CADMIUM

 Directive 2002/32: standard feed materials:

- Vegetable origin: 1 ppm
- Animal origin: 2 ppm
- Mineral origin: 2 ppm – except phosphates: 10 ppm

CADMIUM



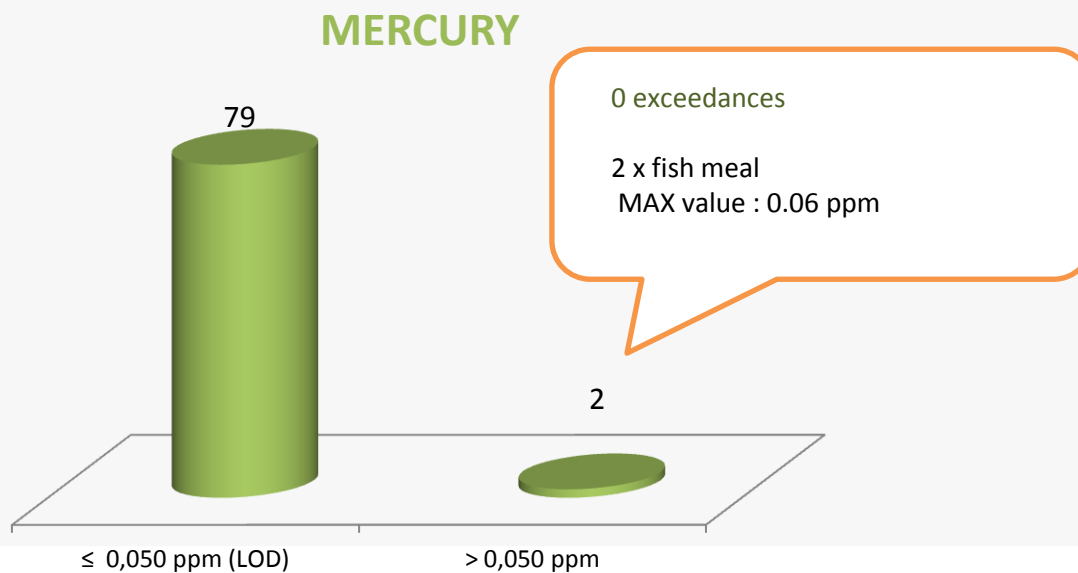
LEVEL 2

Heavy metals

• MERCURY

 Directive 2002/32: standard feed materials : 0.1 ppm – exceptions!

- Fish and other water animals + derivatives : 0.5 ppm
- Calcium carbonate : 0.3 ppm



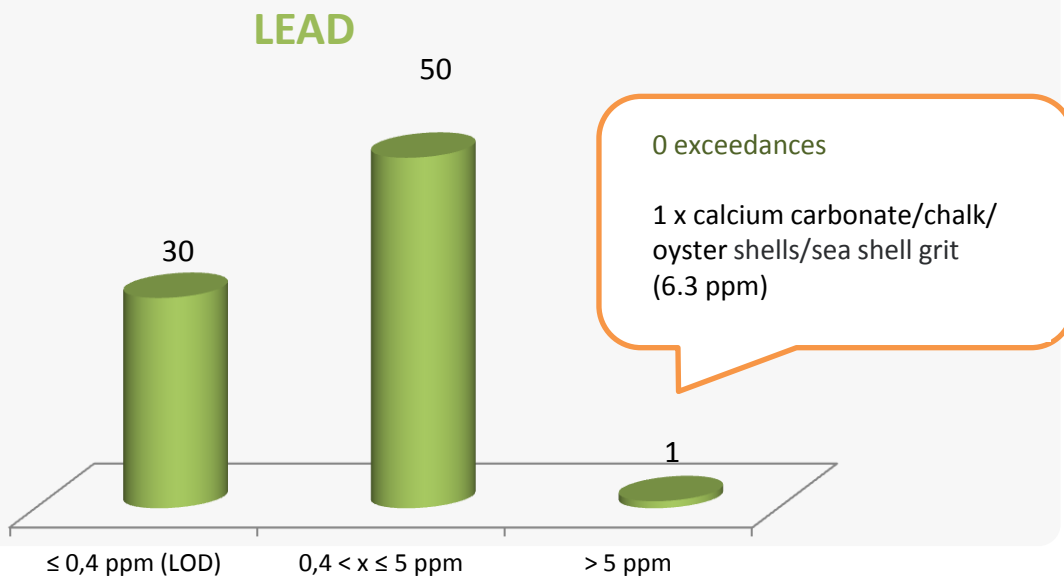
LEVEL 2

Heavy metals

• LEAD

 Directive 2002/32: standard feed materials : 10 ppm - exceptions!

- green fodder : 30 ppm
- phosphates: 15 ppm
- calcium(magnesium) carbonate : 20 ppm
- yeast: 5 ppm



LEVEL 2

Heavy metals

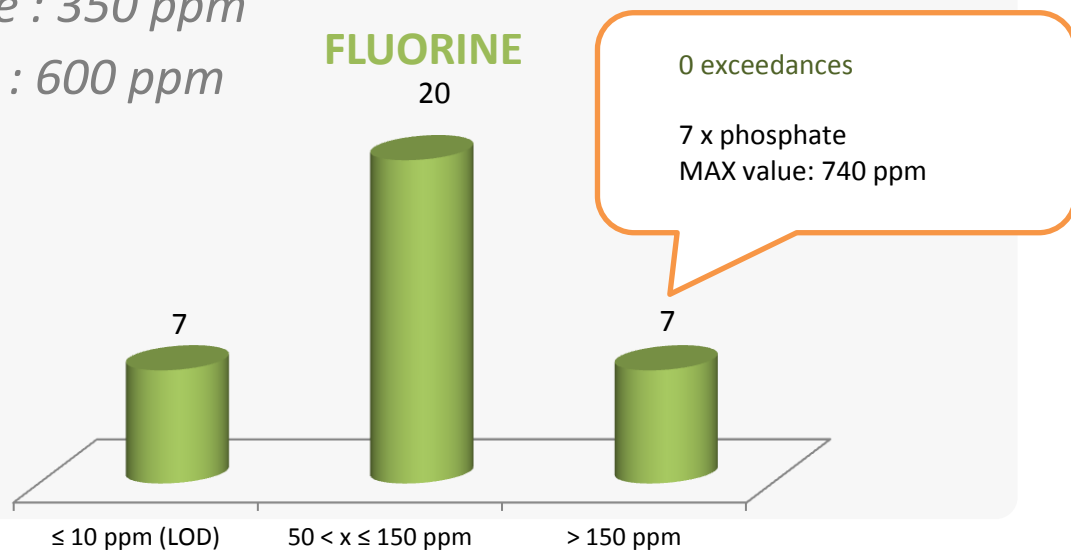
- FLUORINE** (phosphates, beet pulp, MgO)



Directive 2002/32: standard feed materials : 150 ppm

Exceptions, e.g.:

- *Animal origin : 500 ppm*
- *Phosphates : 2000 ppm*
- *Calcium carbonate : 350 ppm*
- *Magnesium oxide : 600 ppm*



LEVEL 2

Heavy metals

PREMIXTURES + MINERAL FEED – purchase

4 heavy metals: Planned: 23 → Realised: **23**

- ✓ Premixtures non-BE manufacturer: 4
- ✓ Premixtures BE manufacturer: 16
- ✓ Mineral feed: 3

LEVEL 2

Heavy metals

- ARSENIC**



Directive 2002/32: No standard for premixtures

Complete animal feed: 2 ppm

Mineral feed: 12 ppm

- ✓ **Premixtures**

ARSENIC	#
≤ 1 ppm (LOD)	9
1 < x ≤ 10 ppm	10
> 10 ppm	1
	20

MAX value: 46 ppm

- ✓ **Mineral feed**

3 results → MAX 2.9 ppm

LEVEL 2

Heavy metals

• CADMIUM



Directive 2002/32: standard premixtures: 15 ppm

Standard mineral feed: 5 ppm (except if $\geq 7\%$ phosphorus)

✓ Premixtures

CADMIUM	#
$\leq 0,1$ ppm (LOD)	5
$0,1 < x \leq 1$ ppm	14
> 1 ppm	1
	20

MAX value: 1.1 ppm

✓ Mineral feed

3 results → MAX: 2.3 ppm

LEVEL 2

Heavy metals

- **MERCURY**



Directive 2002/32:

No standard for premixtures

Standard complete animal feed: 0.1 ppm

Mineral feed: 0.2 ppm

- ✓ **Premixtures**
20 results → all < 0.050 ppm (=LOD)
- ✓ **Mineral feed**
3 results → all < 0.050 ppm (=LOD)

LEVEL 2

Heavy metals

- **LEAD**



Directive 2002/32

Standard premixtures: 200 ppm

Standard mineral feed: 15 ppm – except long-term supply: 60 ppm

- ✓ **Premixtures**

LEAD	#
≤ 0,4 ppm (LOD)	3
0,4 < x ≤ 5 ppm	14
> 5 ppm	3
	20

MAX value: 29 ppm

- ✓ **Mineral feed**

3 results → Max: 2.1 ppm



LEVEL 2

Heavy metals

ADDITIVES – purchase

4 heavy metals: Planned: 35 → Realised: 33

Binders and trace elements

LEVEL 2

Heavy metals

- ARSENIC**

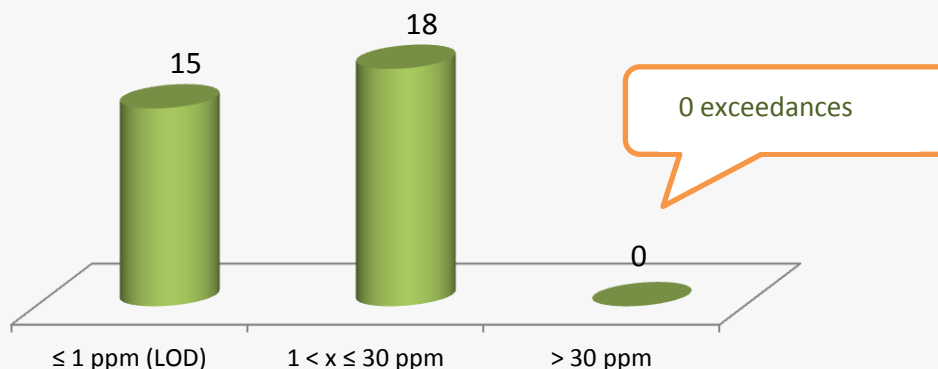


Directive 2002/32:

Standard additives « compounds of trace elements »: 30 ppm

*- except: copper oxide, manganese oxide, zinc oxide : 100 ppm
and copper sulphate pentahydrate, copper carbonate : 50 ppm*

ARSEEN



LEVEL 2

Heavy metals

• CADMIUM

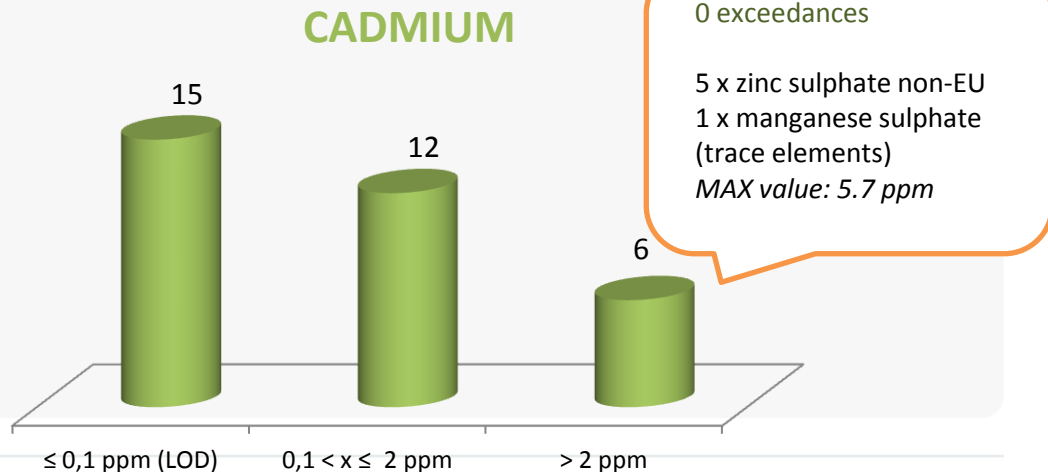


Directive 2002/32

Standard additives « binders and anticaking agents »: 2 ppm

Standard additives « compounds of trace elements »: 10 ppm

- except copper oxide, manganese oxide, zinc oxide, manganese sulphate-monohydrate : 30 ppm



LEVEL 2

Heavy metals

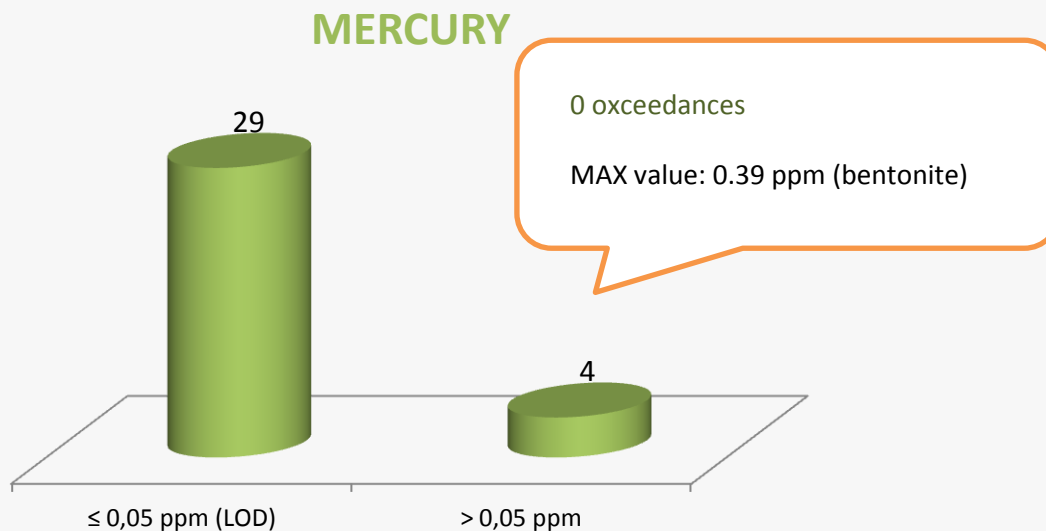
- MERCURY**



Directive 2002/32

No standard for additives

Standard feed materials and compound feed: 0.1 ppm – exceptions!



LEVEL 2

Heavy metals

• LEAD



Directive 2002/32

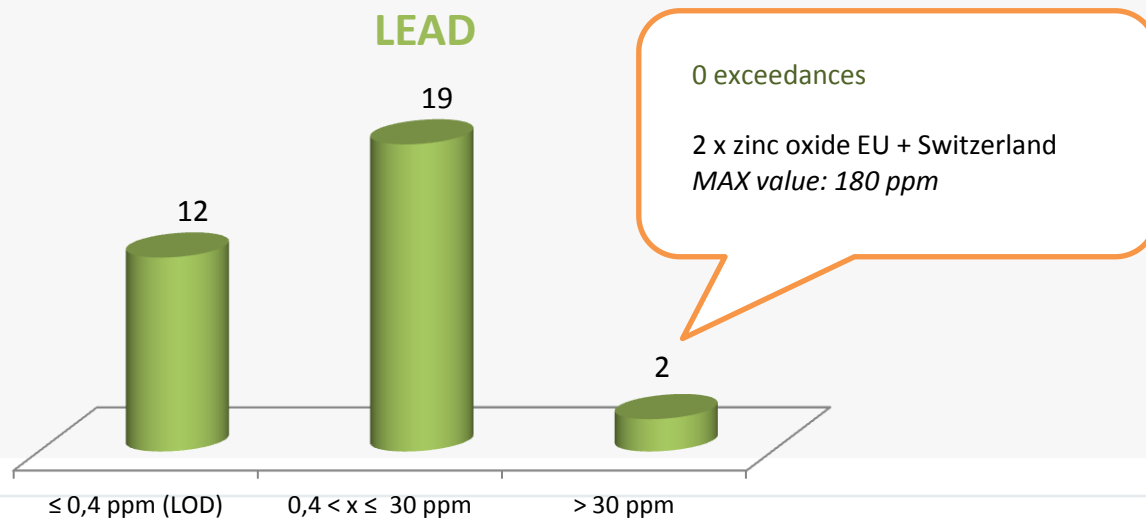
Standard additives « binders and anticaking agents »: 30 ppm

- except clinoptilolite (volcanic origin) : 60 ppm

Standard additives « compounds of trace elements »: 100 ppm

- except zinc oxide: 400 ppm

- except manganese oxide, iron carbonate, copper carbonate: 200 ppm



LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Dioxins & dioxin-like PCBs

Dioxins & dioxin-like PCBs:

Planned: 189 → Realised: **180**

- ✓ Feed materials : 96
- ✓ Premixtures & mineral feed : 22
 - ✓ Additives : 62

LEVEL 2

Dioxins & dioxin-like PCBs

FEED MATERIALS – purchase

• DIOXINS

No exceedances

- ✓ 91 results \leq 0.5 ng/kg
- ✓ 5 results $>$ 0.5 ng/kg:
 - 5x fish oil:
MAX 1.10 ng/kg * *

	Action limit (2002/32)	Standard (2002/32)
* (ng WHO-PCCD/F-TEQ/kg)	*	*
Vegetable feed materials	0.5	0.75
Vegetable oil and by-products	0.5	0.75
Mineral feed materials	0.5	0.75
Animal fat (incl. milkfat and egg fat)	0.75	1.5
Other animal products (terrestrial animals) (incl. milk(products), eggs, egg products)	0.5	0.75
Fish oil	4	5
Fish and other by-products	0.75	1.25
Fish proteins, hydrolysed, $>$ 20% fat	1.25	1.75

LEVEL 2

Dioxins & dioxin-like PCBs

• DIOXIN-LIKE PCBs

No exceedances

- ✓ 90 results \leq 0.35 ng/kg
- ✓ 6 results $>$ 0.35 ng/kg:
 - 1x blended fats: 0.49 ng/kg
 - 5x fish oil: MAX 1.94 ng/kg **

	Action limit 2002/32	Standard 2002/32
* (ng WHO-PCCD/F-TEQ/kg)	*	*
Vegetable feed materials	0.35	
Vegetable oil and by-products	0.5	
Mineral feed materials	0.35	
Animal fat (incl. milkfat & egg fat)	0.75	
Other animal products (terrestrial animals) (incl. milk(products), eggs, egg products)	0.35	
Fish oil	11	
Fish and other by-products	2	
Fish proteins, hydrolysed, > 20% fat	5	

LEVEL 2

Dioxins & dioxin-like PCBs

SUM OF DIOXINS & DIOXIN-LIKE PCBs

No exceedances

- ✓ 91 results \leq 1 ng/kg
- ✓ 5 results $>$ 1 ng/kg:
 - 5x fish oil:
MAX 3.01 ng/kg **

	Action limit 2002/32	Standard 2002/32
* (ng WHO-PCCD/F-TEQ/kg)	*	*
Vegetable feed materials		1.25
Vegetable oil and by-products		1.5
Mineral feed materials		1
Animal fat (incl. milkfat & egg fat)		2
Other animal products (terrestrial animals) (incl. milk(products), eggs, egg products)		1.25
Fish oil		20
Fish and other by-products		4
Fish proteins, hydrolised, $>$ 20% fat		9

LEVEL 2

Dioxins & dioxin-like PCBs

PREMIXTURES & MINERAL FEED – purchase

- DIOXINS**

No exceedances

- ✓ All 22 results \leq 0.5 ng/kg
- ✓ MAX: 0.11 ng/kg

	Action limit 2002/32	Standard 2002/32
* (ng WHO-PCCD/F-TEQ/kg)	*	*
Premixtures	0.5	1
Mineral feed -> compound feed		0.75

LEVEL 2

Dioxins & dioxin-like PCBs

- DIOXIN-LIKE PCBs**

No exceedances

- ✓ All 22 results \leq 0.35 ng/kg
- ✓ MAX : 0.172 ng/kg:
Premixes < 4% ~

	Action limit 2002/32	Standard 2002/32
* (ng WHO-PCCD/F-TEQ/kg)	*	*
Premixtures	0.35	
Mineral feed -> compound feed	0.5	

LEVEL 2

Dioxins & dioxin-like PCBs

- SUM OF DIOXINS & DIOXIN-LIKE PCBs**

No exceedances

- ✓ All 22 results \leq 1.5 ng/kg
- ✓ MAX : 0.279 ng/kg:
Premixes < 4% ~

	Action limit 2002/32	Standard 2002/32
* (ng WHO-PCCD/F-TEQ/kg)	*	*
Premixtures		1.5
Mineral feed -> compound feed		1.5

LEVEL 2

Dioxins & dioxin-like PCBs

ADDITIVES – purchase

- DIOXINS**

No exceedances

- ✓ All 62 results \leq 0.5 ng/kg
- ✓ MAX : 0.28 ng/kg:
choline chloride

	Action limit 2002/32	Standard 2002/32
* (ng WHO-PCCD/F-TEQ/kg)	*	*
“binders” and “anticaking agents”	0.5	0.75
“compounds of trace elements”	0.5	1

LEVEL 2

Dioxins & dioxin-like PCBs

- DIOXIN-LIKE PCBs**

No exceedances

- ✓ All 62 results ≤ 0.35 ng/kg
- ✓ MAX : 0.16 ng/kg :
tocopherol-containing extracts natural origin (E306) °°

	Action limit 2002/32	Standard 2002/32
* (ng WHO-PCCD/F-TEQ/kg)	*	*
“binders” and “anticaking agents”	0.5	
“compounds of trace elements”	0.35	

LEVEL 2

Dioxins & dioxin-like PCBs

• SUM OF DIOXINS & DIOXIN-LIKE PCBs

No exceedances

✓ All 62 results \leq 1.5 ng/kg

✓ MAX : 0.4 ng/kg:

tocopherol-containing extracts natural origin (E306) °°

	Action limit 2002/32	Standard 2002/32
* (ng WHO-PCCD/F-TEQ/kg)	*	*
“binders” and “anticaking agents”		1.5
“compounds of trace elements”		1.5

LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

PCBs

PCBs: Planned: 117 → Realised: **116**

- ✓ Feed materials : 65
- ✓ Premixtures & mineral feed : 22
 - ✓ Additives : 29

LEVEL 2

PCBs

FEED MATERIALS – purchase

- **Sum non-dioxin-like PCBs**

No exceedances

- ✓ 56 results \leq 10 ppb, of which 56 < LOD (6 ppb) (LOD per congener = 1 ppb)
- ✓ 9 results > 10 ppb:
 - 9x fish oil (MAX: 35.12 ppb)

	Standard 2002/32 (ppb = ng/g)
Vegetable feed materials	10
Mineral feed materials	10
Animal fat (incl. milk fat and egg fat)	10
Other animal products (terrestrial animals) (incl. milk(products), eggs, egg products)	10
Fish oil	175
Fish and other by-products	30
Fish proteins, hydrolised, > 20% fat	50

LEVEL 2

PCBs

PREMIXTURES & MINERAL FEED – purchase

- **Sum of non dioxin-like PCBs**

No exceedances

- ✓ 22 results \leq 10 ppb,
of which all 22 $<$ 6 ppb
(LOD per congener = 1 ppb)

	Standard 2002/32 (ppb = ng/g)
Premixtures	10
Mineral feed -> Compound feed	10

LEVEL 2

PCBs

ADDITIVES – purchase

- **Sum of non dioxin-like PCBs**

No exceedances

- ✓ 29 results \leq 10 ppb,
of which all 29 $<$ 6 ppb
(LOD per congener = 1 ppb)

	Standard 2002/32 (ppb = ng/g)
“Binders” and “Anticaking agents”	10
“Compounds of trace elements”	10

LEVEL 2

OVERVIEW

- **Additives - purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - **Melamine**
 - Pesticides
- **Feed materials – purchase**
 - **all parameters**
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Melamine

Melamine: Planned: 45 → Realised: 44

FEED MATERIALS – purchase

- Animal proteins (fishmeal, milk and whey powder), yeasts, wheat gluten feed

ADDITIVES – purchase

- Nutritional additives
- ! Origin: China



*Directive 2002/32: standard for animal feed: 2.5 ppm
- except some additives (urea,...): no standard*

- ✓ All 44 results < 2.5 ppm,
 - ✓ Of which 43 < LOD (0.01 ppm)
 - ✓ MAX: 0.046 ppm (fishmeal (Germany))

LEVEL 2

OVERVIEW

- **Additives** – purchase
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials** – purchase
 - all parameters
- **Premixtures** – purchase
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed** – purchase
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Pesticides

Pesticides: Planned: 276 → Realised: **264**
+ planned: 11 analyses on **paraquat** → Realised: **10**
+ planned: 11 analyses on **glyphosate** → Realised: **11**

In total: 285 results

- ✓ Feed materials : $242+10+11=263$
- ✓ Additives (other sensory additives): 22

LEVEL 2

Pesticides

FEED MATERIALS – purchase



- **Pesticides**



Regulation 396/2005 (pesticides) ↗

Extensive uncertainty of measurement 50 %

→ MRL exceedance if detected level/2 > MRL

! MRLs only for **non processed products // FOOD!**

→ MRL for processed products: use (CONVERSION/PROCESSING) FACTORS

☞ taking into account

- ✓ Production process → ! contact supplier/manufacturer
- ✓ Behaviour of pesticide (e.g. liposolubility)
- ✓ Pesticide use on crops

e.g. rice – rice feed meal

LEVEL 2

Pesticides

FEED MATERIALS – purchase

- **Pesticides**

- ✓ 242 samples :

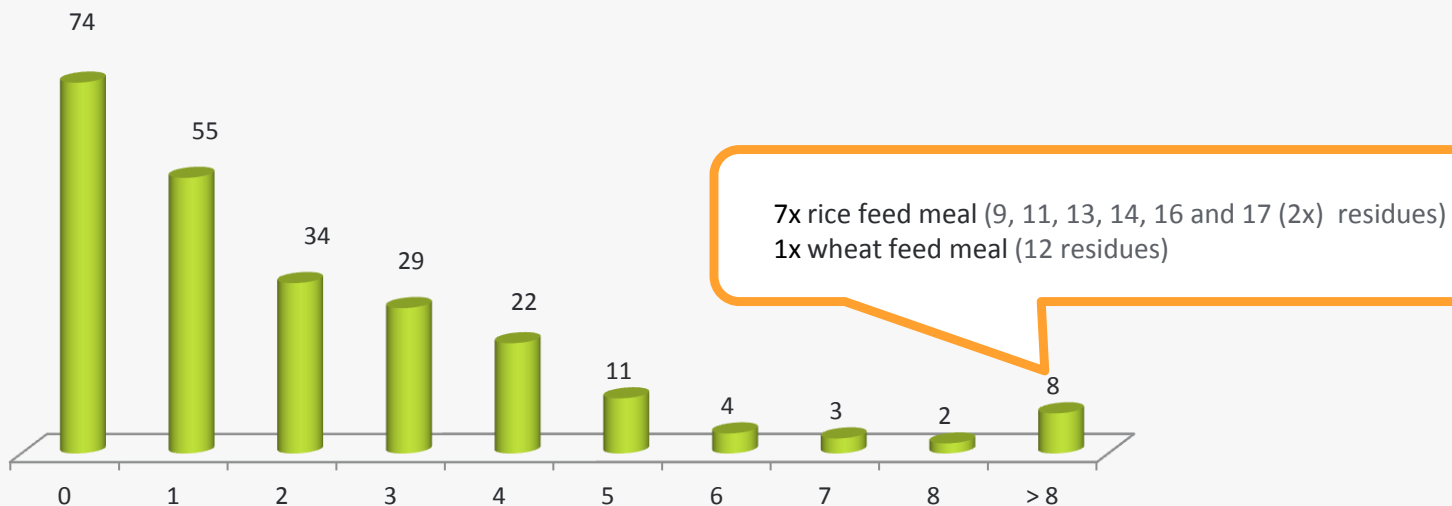
- In **74** (*Plan 2015: 121*) samples: **NO pesticide residue** found
- In **168** (*Plan 2015: 160*) samples: **at least 1 pesticide residue** found
 - ❖ N° of residues found in 1 sample :
1 → 17 (*Plan 2015: 1 → 14*)
 - ❖ In these 168 samples: in total **47 different residues** found
(*Plan 2015: 47*)

LEVEL 2

Pesticides

- ✓ 242 samples:
 - In **168** samples: **at least 1 pesticide residue** were found
 - ❖ N° of residues found in 1 sample : **1 → 17**

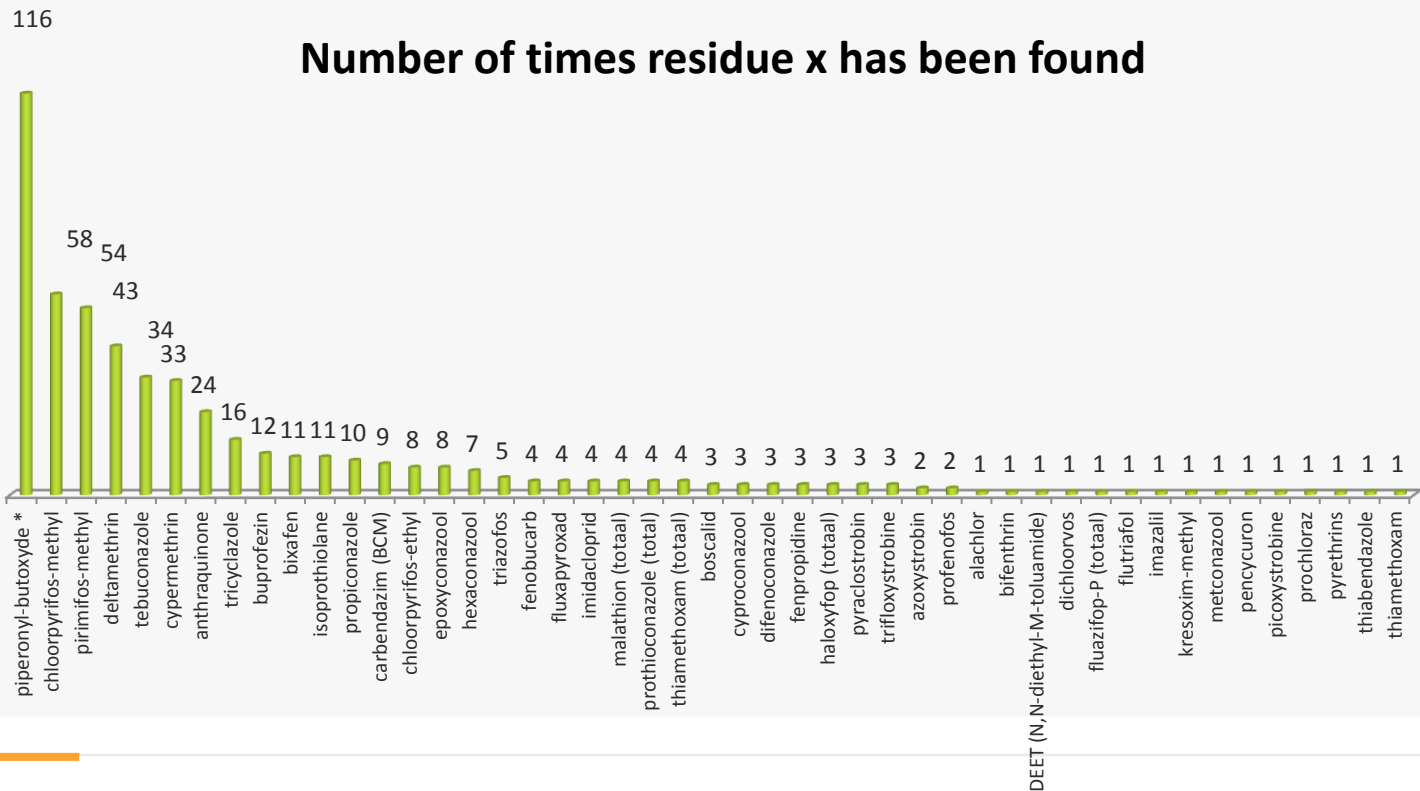
N° of samples in which x residues were found



LEVEL 2

Pesticides

- ✓ 242 samples:
 - In **168** samples: **at least 1 pesticide residue** were found
 - ❖ In these 168 samples: in total **47 different residues** were found



LEVEL 2

Pesticides

- ✓ 242 samples:
 - In **168** samples: **at least 1 pesticide residue** were found
 - ❖ In these 168 samples: in total **47 different residues** were found
 - *which feed materials?: + see following slides*

TOP 10	Pesticide residue	N° of cases	<i>Cfr. Top "10+"-in Plan 2015</i>
1	<i>piperonyl-butoxyde *</i>	116	1
2	chlorpyrifos-methyl	58	3
3	pirimifos-methyl	54	2
4	deltamethrin	43	5
5	tebuconazole	34	4
6	cypermethrin	33	6
7	anthraquinone	24	7
8	tricyclazole	16	8
9	buprofezin	12	17
10	bixafen	11	27
11	isoprothiolane	11	19

LEVEL 2

Pesticides

TOP 10 of the residues found: in which feed materials?

1

Piperonyl-butoxide has been found in	#
Wheat gluten feed	21
Rice feed meal	14
Wheat bran	11
Maize DDGS EU (production process without use of AB)	10
Barley, feed, 6-rowed	8
Wheat	6
Maize, yellow, France	6
Spelt	6
Wheat feed meal	4
Soybean hulls	4
Barley, flaked, crushed	3
Rye	3
Short wheat flour	3
Broken maize	2
Triticale	2
Wheat pollards	2
Soybean oil (crude and refined)	2
Barley, light	1
Wheat, light	1
Maize, Belgian, dried	1
Maize flakes	1
Maize, non-European	1
Maize, European, non-EU	1
Wheat germ	1
Rice feed scrap	1
Sesame seed	1
	116

LEVEL 2

Pesticides

TOP 10 of the residues found: in which feed materials?

2

Chlorpyrifos-methyl has been found in	#
Wheat gluten feed	21
Wheat	8
Wheat bran	7
Barley, feed, 6-rowed	5
Wheat feed meal	4
Maize, yellow, France	3
Rice feed meal	2
Spelt	2
Short wheat flour	2
Barley, flaked, crushed	1
Maize DDGS EU (production process without use of AB)	1
Maize, European, non-EU	1
Wheat pollards	1
	58

LEVEL 2

Pesticides

TOP 10 of the residues found: in which feed materials?

3

pirimifos-methyl has been found in	#
Wheat gluten feed	13
Wheat bran	8
Wheat feed meal	4
Maize DDGS EU (production process without use of AB)	4
Maize, non-European	3
Short wheat flour	3
Soy oil (crude & refined)	3
Barley, feed, 6-rowed	2
Wheat	2
Maize, yellow, France	2
Wheat pollards	2
Rice feed meal	2
Soybean hulls	2
Barley, flaked, crushed	1
Broken maize	1
Maize, European, non-EU	1
Soy fatty acids	1
	54

LEVEL 2

Pesticides

TOP 10 of the residues found: in which feed materials?

4

deltamethrin has been found in	#
Wheat gluten feed	8
Wheat bran	6
Rice feed meal	6
Barley, feed, 6-rowed	4
Wheat feed meal	3
Maize DDGS EU (production process without use of AB)	3
Wheat	2
Wheat pollards	2
Barley, light	1
Maize, yellow, France	1
Broken maize	1
Maize, non-European	1
Rye	1
Triticale	1
Spelt	1
Short wheat flour	1
Soybean hulls	1
	43

LEVEL 2

Pesticides

TOP 10 of the residues found: in which feed materials?

5

tebuconazole has been found in	#
Rice feed meal	12
Spelt	8
Wheat gluten feed	5
Wheat feed meal	3
Wheat	2
Short wheat flour	2
Wheat bran	1
Rice feed scrap	1
	34

LEVEL 2

Pesticides

TOP 10 of the residues found: in which feed materials?

6

Cypermethrin has been found in	#
Wheat gluten feed	8
Rice feed meal	5
Barley, feed, 6-rowed	3
Spelt	3
Wheat bran	3
Wheat	2
Maize, yellow, France	2
Broken maize	1
Maize, non-European	1
Wheat feed meal	1
Short wheat flour	1
Wheat pollards	1
Wheat germ	1
Colza oil (crude & refined)	1
	33

LEVEL 2

Pesticides

TOP 10 of the residues found: in which feed materials?

7

anthraquinone has been found in	#
Maize DDGS EU (production process without use of AB)	20
Wheat	1
Maize, non-European	1
Soy oil (crude & refined)	1
Soy fatty acids	1
	24

9

buprofezin has been found in	#
Rice feed meal	11
Rice feed scrap	1
	12

REMARK: anthraquinone in DDGS → PAHs

8

tricyclazole has been found in	#
Rice feed meal	15
Rice feed scrap	1
	16

10

isoprothiolane has been found in	#
Rice feed meal	10
Rice feed scrap	1
	11

bixafen has been found in	#
Spelt	8
Barley, feed, 6-rowed	1
Barley, flaked, crushed	1
Wheat feed meal	1
	11

LEVEL 2

Pesticides

In which feed materials pesticide residues were found most frequently ?

Feed material	N° times min 1 pesticide residue has been found in that feed material	Present in top 10 from 2015
Maize DDGS EU (production process without use of AB)	21	x
Wheat gluten feed	21	x
Rice feed meal	16	x
Spelt	14	x
Wheat bran	12	
Wheat	11	
Barley, feed, 6-rowed	10	
Maize, yellow, FR	8	x
Soy oil (crude & refined)	7	x
Soybean hulls	5	
Wheat feed meal	5	
Maize, non-European	4	
Rye	4	
Barley, flaked, crushed	3	
Maize, European, non-EU	3	
Soy fatty acids	3	
Short wheat flour	3	x
Triticale	3	x

Feed material	aantal keer dat in het voedermiddel min 1 pesticidenresidu werd teruggevonden	Present in top 10 from 2015
Broken maize	2	
Wheat pollards	2	
Citrus pulp	1	x
Barley, light	1	
Colza fatty acids	1	
Colza oil (crude & refined)	1	
Linseed oil	1	
Maize, Belgian, dried	1	
Maize flakes	1	
Rice feed scrap	1	
Sesame seed	1	
Wheat, light	1	
Wheat germ	1	
	168	

LEVEL 2

Pesticides

Exceedances?

☞ Reminder

! MRLs only for non processed products

→ MRL for processed products:
use of (CONVERSION/PROCESSING) FACTORS

2 exceedances:

Spelt (BE) - dichlorvos

MRL: 0.01 mg/kg

Result: 0.032 mg/kg (0.016 mg/kg after deduction measuring error)

Spelt (FR) - tebuconazole

MRL: 0.1 mg/kg

Result: 1.031 mg/kg (0.5155 mg/kg after deduction measuring error)

LEVEL 2

Pesticides - PARAQUAT

FEED MATERIALS – Purchase

- **PARAQUAT – additional monitoring**
 - ✓ 10 samples (raw soybeans):
 - No residue of paraquat has been detected

LEVEL 2

Pesticides – GLYFOSAAT

FEED MATERIALS – Purchase

- **GLYPHOSATE – additional monitoring**
 - ✓ 11 samples (raw soybeans and soybean hulls):
 - In 5 samples: residues of glyphosate have been found:
 - 1x raw soybeans
0.17 mg/kg (MRL: 20 mg/kg)
 - 4x soybean hulls
MAX value: 4.6 mg/kg

LEVEL 2

Pesticides

ADDITIVES – purchase

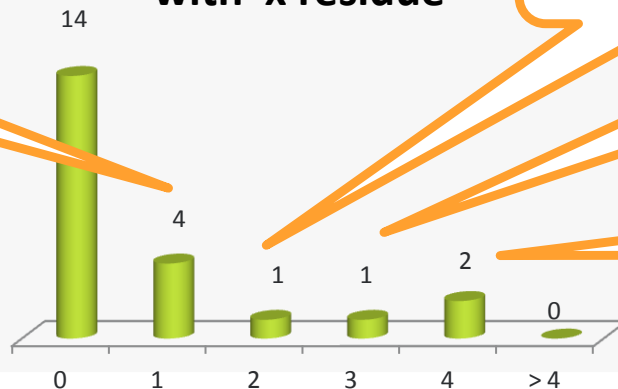
- Pesticides**

✓ 22 samples:

- In **14** samples: **NO pesticide residue** has been found
- In **8** samples: at least **1 pesticide residue** has been found

(Plan 2015: 8)

Number of samples with x residue



2x pirimifos-methyl, anthraquinone, chloorpyrifos-ethyl

piperonyl-butoxyde*, thiabendazole

chloorpyrifos-ethyl, deltamethrin, piperonyl-butoxyde*

2x (chloorpyrifos-ethyl, cypermethrin, piperonyl-butoxyde*, pirimifos-methyl)

LEVEL 2

Pesticides

FEED MATERIALS – purchase

ADDITIVES – purchase

- **Pesticides**

Want to know more?

→ OVERVIEW ANALYSIS RESULTS (anonymous):

Analysis > Results > Undesirable substance

<http://www.bemefa.be/Analysis/AnonymousResults.aspx>

LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
 - PAHs
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs


LEVEL 2

PAHs

FEED MATERIALS – purchase

PAHs: Planned: 67 → Realised: **71**

6 additional analyses, because antraquinone has been found in DDGS maize

 FCA BT-01: Product	Action-limit (µg/kg)	Rejection limit (µg/kg)
Fats	50	150
Feed materials or side streams-to be transformed (humidity > 16%)	50	150
Feed materials or side streams-to be transformed (dry process)	50	150
Other feed materials or side streams to be transformed	50	

PAHs	#
< 20 µg/kg (LOD)	62
20-50 µg/kg	9
> 50 µg/kg (LOD)	0
	71

MAX value: 37 µg/kg (luzerne)

LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
 - Mycotoxines
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Mycotoxins

FEED MATERIALS – purchase

Mycotoxins: Planned: 362 → Realised: **355**

Aflatoxin B1: Planned: 58 → Realised: **55**

*REMARK: Mycotoxin analysis
= DON + ZEA + OTA + FUM B1 / B2, T2 / HT2
+ AFLA B1
+ AFLA B2 / G1 / G2*

→ **355 + 55 = 410 results aflatoxin B1**

→ **355 results other mycotoxins**

LEVEL 2

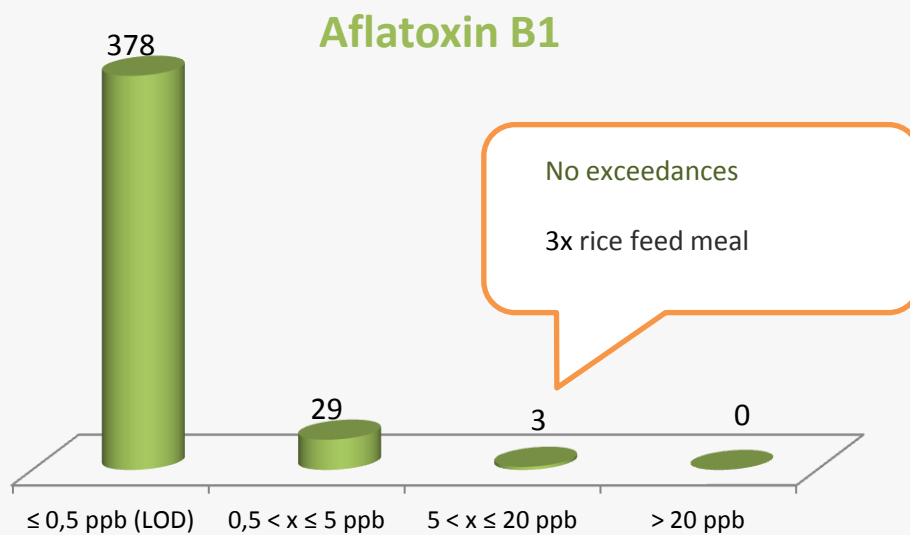
Mycotoxins

• AFLATOXIN B1



Standard (Directive 2002/32) feed materials: 20 ppb

REMARK: feed materials for dairy cattle feed or intended for direct delivery to farmers: 5 ppb



LEVEL 2

Mycotoxins

• AFLATOXIN B2 / G1 / G2

 *No legislation*

AFLATOXIN B2	#	
≤ 0.5 ppb (LOD)	353	
< 0.5 ppb	2	2x rice feed meal (MAX 1.9 ppb)
	355	

AFLATOXIN G1	#	
≤ 0.5 ppb (LOD)	352	Maize gluten feed (EU)
< 0.5 ppb	3	Maize gluten meal (EU)
	355	Broken maize (MAX 2.2 ppb)

AFLATOXIN G2	#	
≤ 0.5 ppb (LOD)	351	
< 0.5 ppb	4	3x oat peels (MAX 1.1ppb)
	355	1x spelt

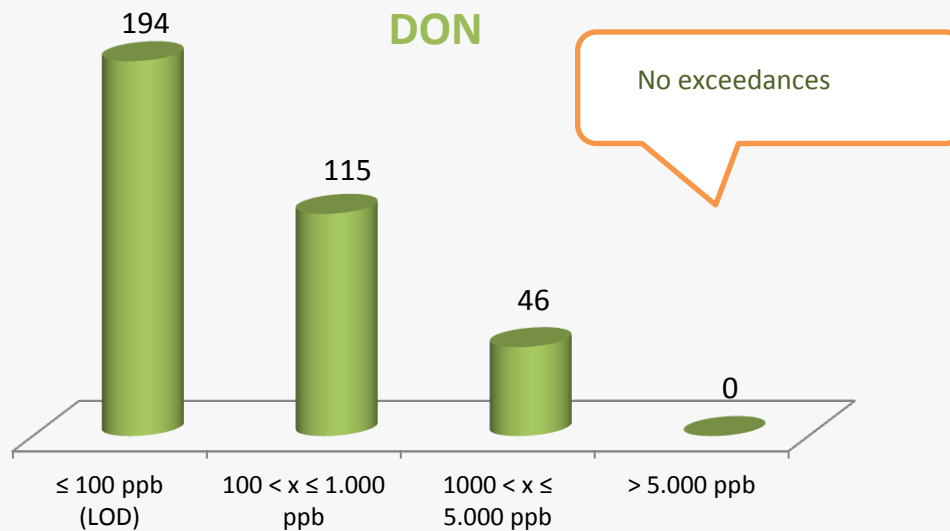
LEVEL 2

Mycotoxins

- **DON (deoxynivalenol)**

 Recommendation 2006/576 → guidance value :


- cereals and cereal products : 8000 ppb
- maize by-products : 12 000 ppb

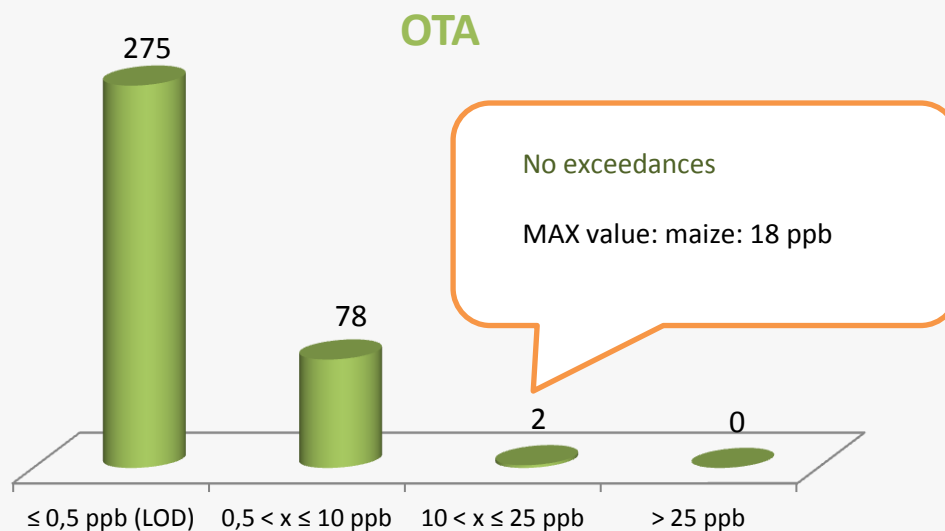


LEVEL 2

Mycotoxins

- **OTA (ochratoxin A)**

 Recommendation 2006/576 → guidance value:
cereals and cereal products : 250 ppb



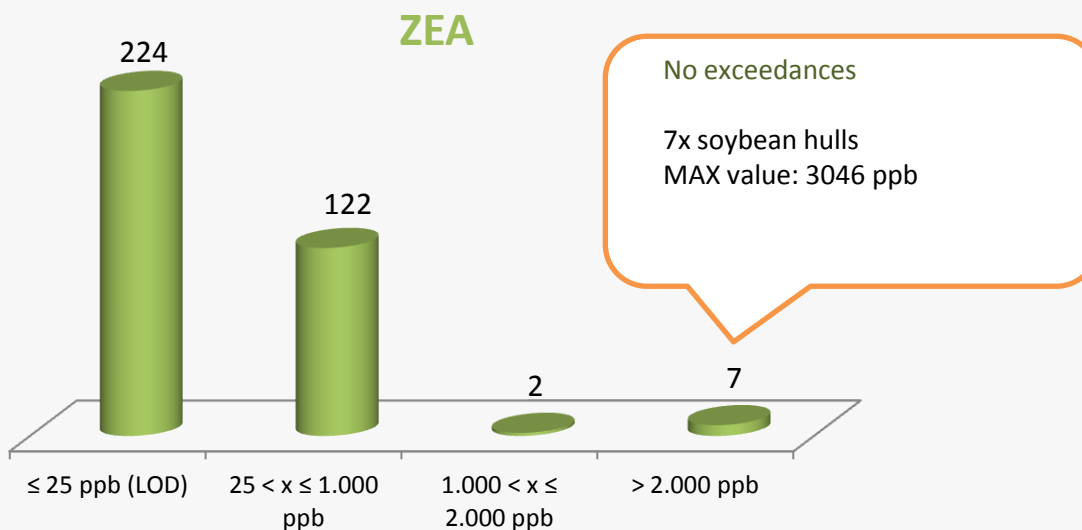
LEVEL 2

Mycotoxins

- ZEA (zearalenon)**

Recommendation 2006/576 → guidance value:

- cereals and cereal products: 2000 ppb
- maize by-products: 3000 ppb




CF OVOCOM notice 2016

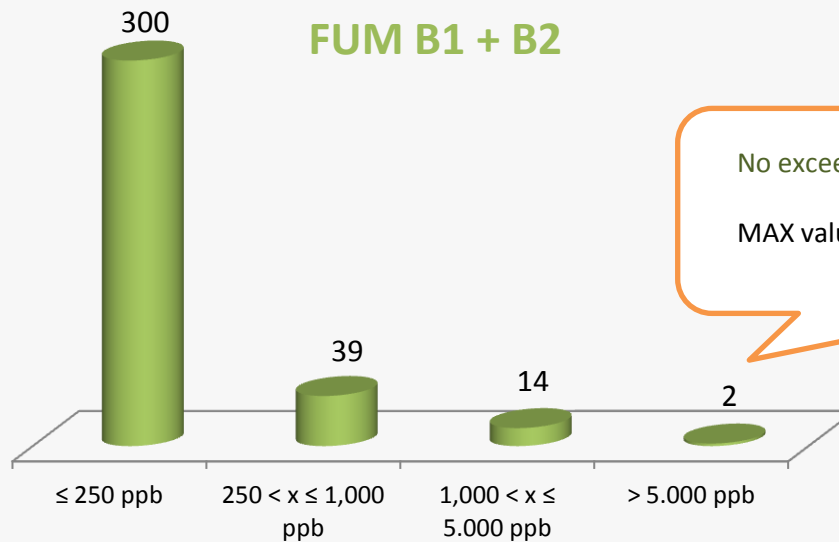
'Increased levels of ZEA in soybean hulls'

LEVEL 2

Mycotoxins

- FUM B1 + FUM B2 (Fumonisin)**

 Recommendation 2006/576 → guidance value:
maize and maize by-products: 60 000 ppb



No exceedances

MAX value: 29 048 ppb - broken maize

LEVEL 2

Mycotoxins

• T2, HT2



Recommendation 2013/165: **T2+HT2**

unprocessed cereals :

- barley and maize: 200 ppb
- oats: 1000 ppb
- wheat, rye and other cereals : 100 ppb

cereal products for feed and compound feed :

- oat milling products (husks): 2000 ppb (oat peels)
- other cereal products: 500 ppb
- compound feed: 250 ppb

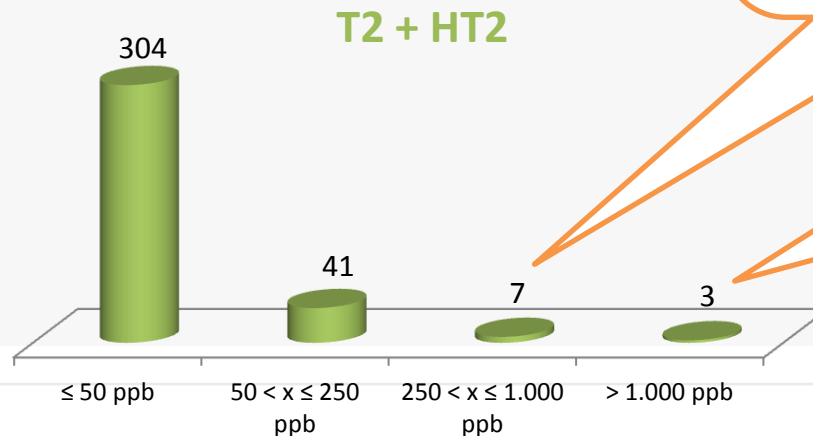
2 exceedances (target values)

maize **Ukrain** : 281.4 ppb
 (after submission MF 270.4 ppb)
 maize **European, non-EU**: 297 ppb
 (after submission MF: 268 ppb)

3x oat peels: MAX value: 650 ppb
 Broken maize : 293 ppb
 oats: 846 ppb

No exceedances

3x oat peels
 MAX value 1436 ppb *



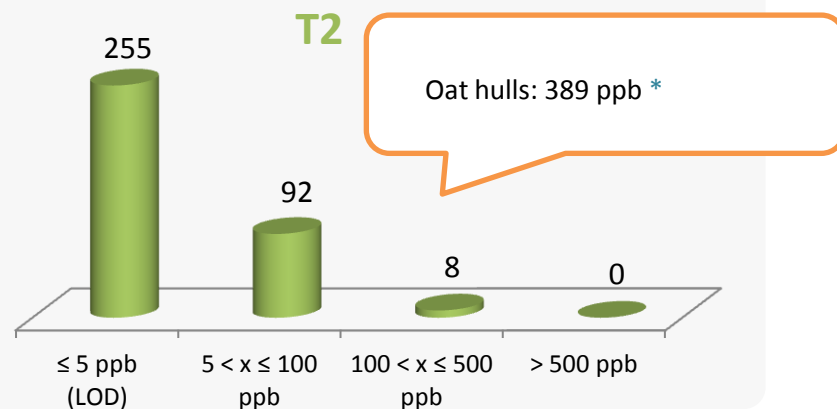
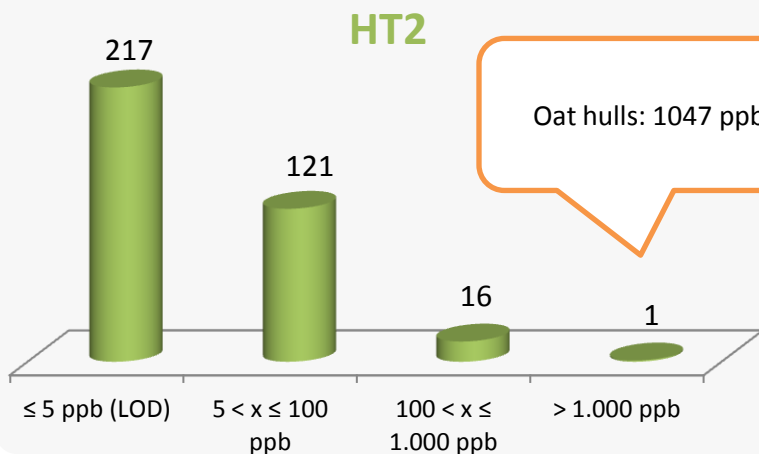
LEVEL 2

Mycotoxins

• T2, HT2

Action limits FASFC: FEED T2/HT2

- Compound feed poultry: 400 ppb
- Compound feed fattening pigs: 500 ppb
- Compound feed piglets: 200 ppb
- Compound feed calves: 200 ppb



LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
 - Ergot
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Ergot

FEED MATERIALS – purchase

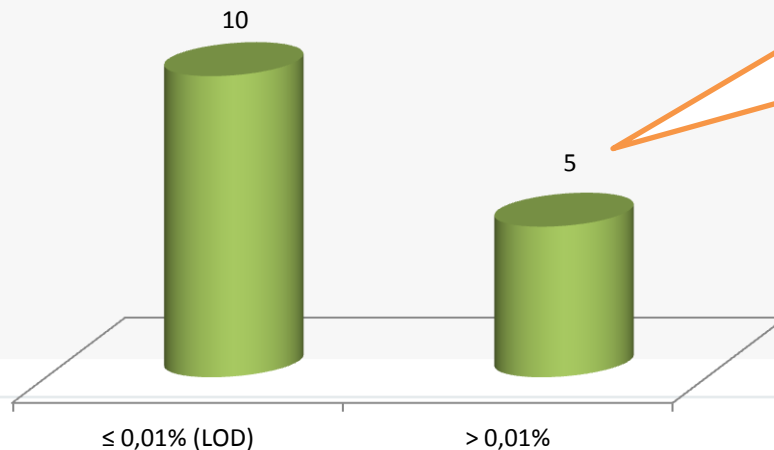
Ergot: Planned: 20 → Realised: 15

(4x Rye + 11x triticale)



Standard (Directive 2002/32): feed materials and compound feed containing unground grains : 0.10% (m/m) → 1000 mg/kg

ERGOT



1 exceedance

3 x triticale= MAX: 0.0669% (m/m)

2 x rye, of which 1 NC

rye: 0.13% > 0.10% (m/m)

LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
 - Ambrosia
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Ambrosia

FEED MATERIALS – purchase

Ambrosia: Planned: 23 → Realised: **28**
(oil-containing seeds)



Standard (Directive 2002/32):

feed materials: 0.005% (m/m) → 50 mg/kg

- except millet and sorghum, indirect feeding: 0.020%

✓ 28 results → all < 0.005% (LOD)

LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
 - hydrocyanic acid
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Hydrocyanic acid

FEED MATERIALS – purchase

Hydrocyanic acid: Planned: 43 → Realised: **43**

*sorghum,
linseed, linseed expeller, linseed feed*

! *HPLC method (EN 16160)*

>< *EG 71250: interference sorghum, rapeseed*

LEVEL 2

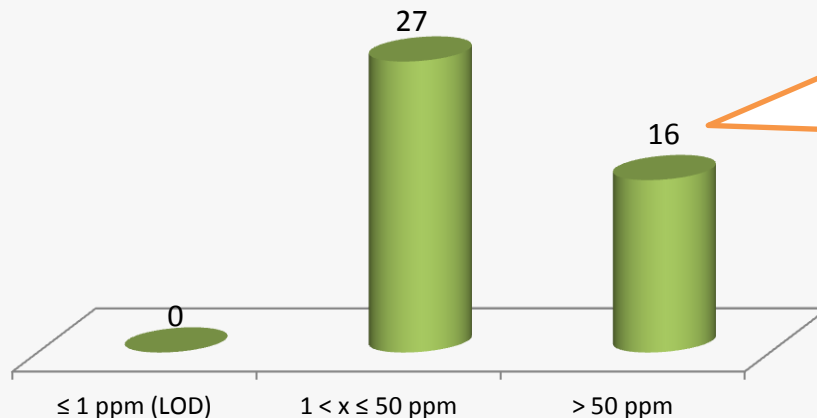
Hydrocyanic acid

• Hydrocyanic acid

 *Standard (Directive 2002/32): feed materials: 50 ppm – exceptions!*

- *linseed 250 ppm*
- *linseed cake (expeller, meal): 350 ppm*
- *cassava products and almond cakes: 100 ppm*

HYDROCYANIC ACID



1 exceedance

5x linseed extruded: MAX: 210 ppm
 2x linseed expeller: MAX: 110 ppm
 9x linseed, of which 1 NC
 Belgian linseed: 289 ppm
 (26 ppm after deduction MF)

LEVEL 2

OVERVIEW

- **Additives** – purchase
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials** – purchase
 - all parameters
 - Salmonella
- **Premixtures** – purchase
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed** – purchase
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Salmonella

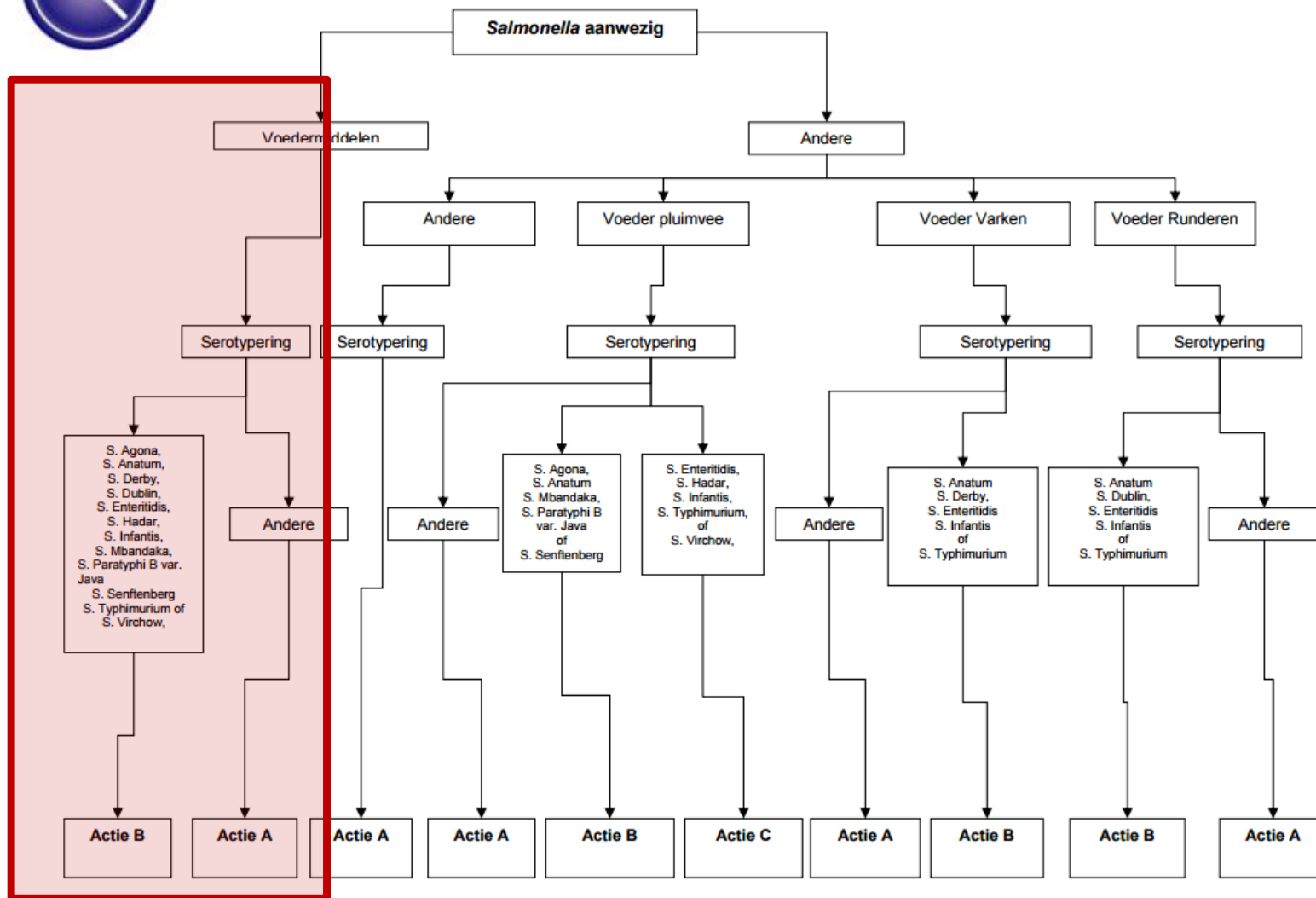
FEED MATERIALS – purchase

Salmonella: Planned: 122 → Realised: **129**



Standard: absence / 25g

- ✓ 127 results → Salmonella: absent in 25g
- ✓ 2 results → Salmonella: present in 25 g
 - **S. Stourbridge** in rapeseed → *action A*
 - **S. species** in colza- and rapeseed feed → *action A*





Actie	Bij landbouwer	Bij mengvoederfabrikant	Bij handelaar/fabrikant grondstoffen
A	Voedermiddelen & mengvoeders: <ul style="list-style-type: none"> - Onderzoek bij de landbouwer - Onderzoek leverancier/fabrikant - Waarschuwing² 	Voedermiddelen & mengvoeders: <ul style="list-style-type: none"> - Onderzoek bron + maatregelen - Onderzoek bij leverancier/fabrikant - Waarschuwing² 	Voedermiddelen & mengvoeders: <ul style="list-style-type: none"> - Onderzoek bron + maatregelen - Onderzoek bij leverancier/fabrikant - Waarschuwing²
B	Voedermiddelen & mengvoeders: <ul style="list-style-type: none"> - Onderzoek bij de landbouwer - Afhankelijk van het onderzoek, maatregelen ter voorkoming van hercontaminatie op het bedrijf (reiniging, ontsmetting) - Informatie PRI - Onderzoek bij leverancier/fabrikant - Waarschuwing² 	Voedermiddelen (1) <ul style="list-style-type: none"> - Beslagname voedermiddel aanwezig op bedrijf - Behandeling (van het VM zelf of via gebruik in mengvoeders (bv pelletiseren) + bewijs afwezigheid - Informatie afnemers + controle hierop - Beslagname aangemaakte voeders bij fabrikant + bemonstering (n=5) & analyse <ul style="list-style-type: none"> ⇒ Voor NC B voeders: zie (2) ⇒ Voor NC C voeders: zie (3) & (4) - Onderzoek bron + maatregelen - Onderzoek bij leverancier/fabrikant - RASFF indien noodzakelijk - Waarschuwing² Mengvoeders (2) <ul style="list-style-type: none"> - Beslagname mengvoeders nog aanwezig op het bedrijf - Behandeling + bewijs afwezigheid - Informatie afnemers + controle hierop - Onderzoek bron + maatregelen - RASFF indien noodzakelijk - Waarschuwing² 	Voedermiddelen & mengvoeders: <ul style="list-style-type: none"> - Beslagname - Behandeling + bewijs afwezigheid - Informatie afnemers + controle hierop - Onderzoek bij afnemers (zie (1)) - Onderzoek bron + maatregelen - Onderzoek bij leverancier/fabrikant - RASFF indien noodzakelijk - Waarschuwing²
C	Mengvoeders (4) <ul style="list-style-type: none"> - Beslagname van de voeders - Informatie PRI - Onderzoek bij de landbouwer - Afhankelijk van het onderzoek, maatregelen ter voorkoming van hercontaminatie op het bedrijf (reiniging, ontsmetting) - Onderzoek bij leverancier/fabrikant - Waarschuwing² 	Mengvoeders (3) <ul style="list-style-type: none"> - Beslagname + recall - Behandeling + bewijs afwezigheid - Informatie afnemers + controle hierop - Informatie PRI - Onderzoek bron + maatregelen - RASFF indien noodzakelijk - Waarschuwing² 	

² Waarschuwing (WS) t.a.v. de verantwoordelijke voor de besmetting. Indien de verantwoordelijk niet kan worden aangeduid WS aan diegene bij wie het monster werd genomen. Een waarschuwing zal steeds opgevolgd worden met een nieuwe monstername binnen 3 maand. Een 2de waarschuwing zal niet noodzakelijk aanleiding geven tot een PV wanneer de 2 besmettingen niet gerelateerd zijn.

LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
 - Insoluble impurities
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Insoluble impurities

FEED MATERIALS – purchase

Insoluble impurities: Planned: 12 → Realised: 5

Standard not applicable to APIM-members (ox fat)



Standard (Reglementation 142/2011):

rendered ruminant fat (or mixtures containing rendered ruminant fat): 0.15% (% in weight)

- ✓ 2 results < 0.03 % (LOD)
- ✓ 3 results > 0.03 % (MAX: 0.12 %)

no exceedances

LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - All parameters
 - Fungi
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Fungi

FEED MATERIALS – purchase

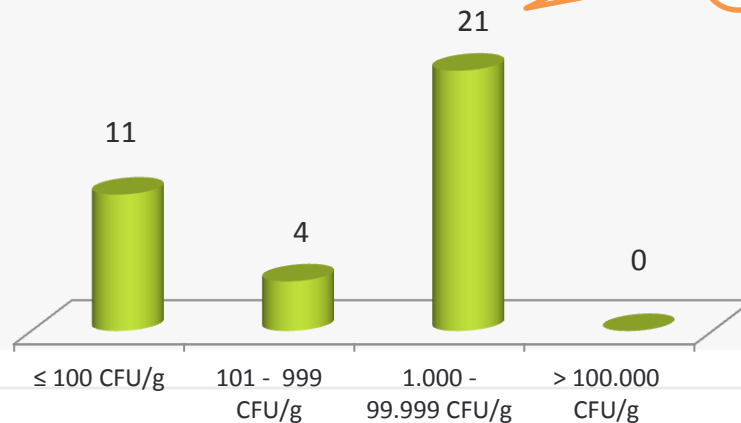
Fungi: Planned: 36 → Realised: **36**



FCA BT-01 action limit:

feed materials: 100 000 CFU/g

FUNGI



No exceedances

MAX value 26 000 CFU/g (spelt)

LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
 - enterobacteriaceae
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Enterobacteriaceae

FEED MATERIALS – purchase

Entero: Planned: 5 → Realised: 5

Fishmeal, egg products



FCA AT-11: 300 CFU/g

- ✓ 4 results \leq 0.10 CFU/g
 - ✓ 1 result $>$ 0.10 CFU/g:
 - Fishmeal (Latin-America): 20 CFU/g
- no exceedances

LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
 - Antibiotics
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

Antibiotics

FEED MATERIALS – purchase

Antibiotics: Planned: 14 → Realised: 12

*wheat DDGS, maize DDGS,
dried yeast (by-products of bio-ethanol production),
vinasses ((by-products of bio-ethanol production)*



	Standard (ppb)	Results (ppb)
virginamycine	absence	< 25
decoquinate	400	< 100
semduramycine	250	< 62,5
salinomycine	700	< 175
monensin	1250	< 312,5
halofuginone	30	< 15
lasalocid	1250	< 312,5
nicarbazin	1250	< 312,5
robenidine	700	< 175
diclazuril	10	< 2,5
maduramycine	50	< 12,5
narasin	700	< 175

No exceedances

All results < LOD

LEVEL 2

Chloramphenicol

FEED MATERIALS – purchase

Planned: 11 → Realised: **11**

*Fermentation products:
digestibility enhancers, amino acids, intestinal stabilizers*



Usage not authorized in the EU

✓ All results < LOD (0.26 ppb)

LEVEL 2

OVERVIEW

- **Additives – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
 - Melamine
 - Pesticides
- **Feed materials – purchase**
 - all parameters
 - GMO
- **Premixtures – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs
- **Mineral feed – purchase**
 - Heavy metals
 - Dioxins & dioxin-like PCBs
 - PCBs

LEVEL 2

GMO

FEED MATERIALS – purchase

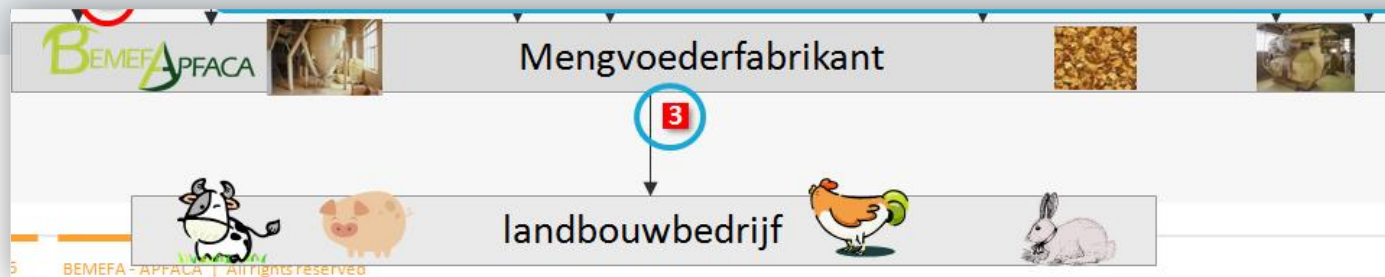
Planned: 6 → Realised: 7

*Additives Chinese origin
(vegetable carrier)*

- ✓ NO vegetable material containing GMO has been found in any of the samples

Results

- Level 1
- Level 2
- **Level 3**



LEVEL 3

OVERVIEW

- **Compound feed** – production
 - Mycotoxins
 - Salmonella
- **Mineral feed** – production
 - Heavy metals

LEVEL 3

OVERVIEW

- **Compound feed** – production
 - Mycotoxins
 - Salmonella
- **Mineral feed** – production
 - Heavy metals

LEVEL 3

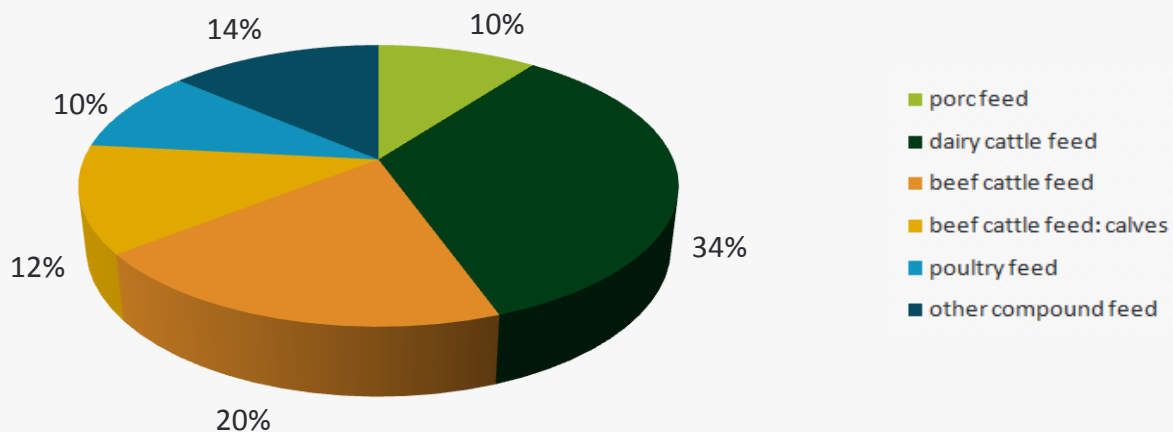
Mycotoxins

COMPOUND FEED – Production

Mycotoxins: Planned: 149 → Realised: **146**

Objective: 1/3 of the samples on dairy cattle feed

Mycotoxins in compound feed (production)



LEVEL 3

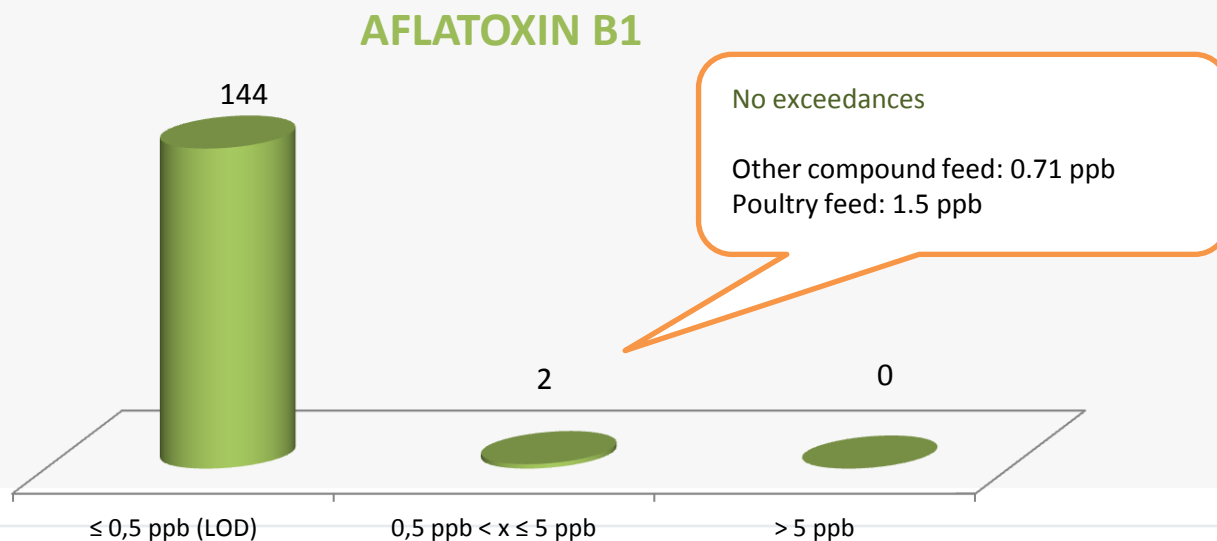
Mycotoxins

• AFLATOXIN B1



Standard (Directive 2002/32) complementary and complete feedstuffs: 10 ppb

- *Except: dairy cows, calves, dairy sheep, lambs, dairy goats, baby goats, piglets, young poultry: 5 ppb*
- *Except: oxen, sheep, goats, pigs, poultry: 20 ppb (excl. above mentioned exceptions)*



LEVEL 3

Mycotoxins

- **AFLATOXIN B2 / G1 / G2**



No legislation

- ✓ Aflatoxin B2: all results < LOD (1 ppb)
- ✓ Aflatoxin G1: all results < LOD (0,5 ppb)
- ✓ Aflatoxin G2: 144 results < LOD (1 ppb)
MAX 3.1 ppb (dairy cattle feed)

LEVEL 3

Mycotoxins

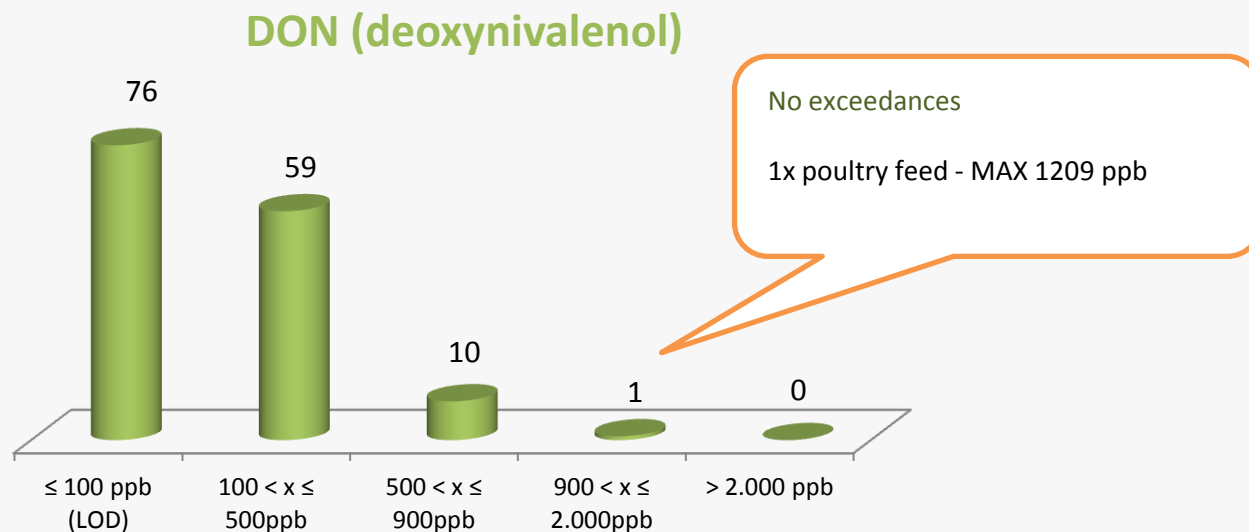
- DON (deoxynivalenol)**

Recommendation 2006/576 → guidance values

Complementary and complete feedstuffs: 5000 ppb

- except pigs: 900 ppb


- except calves, lambs, baby goats : 2000 ppb



LEVEL 3

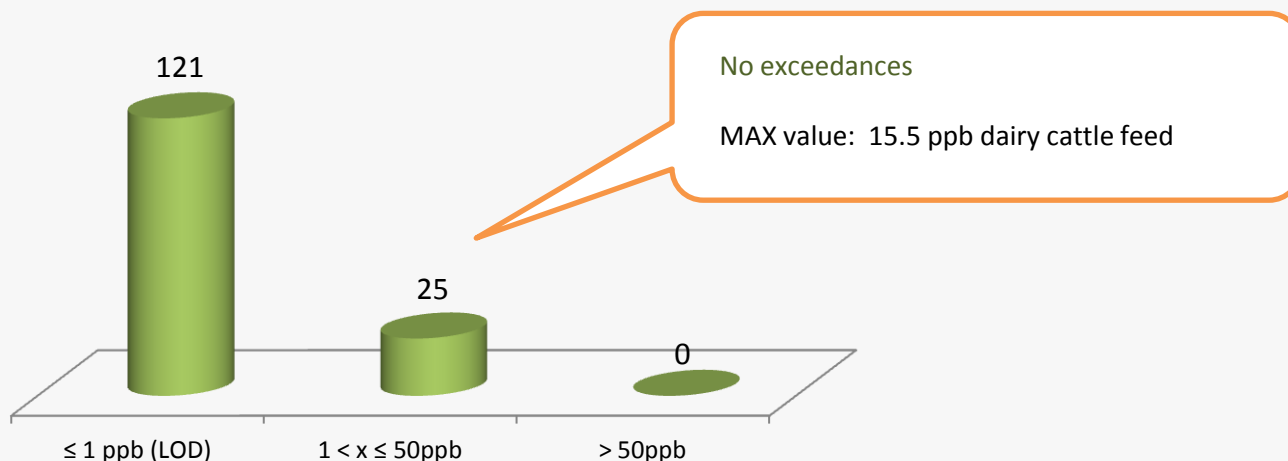
Mycotoxins

- **OTA (ochratoxin A)**

 Recommendation 2006/576 → guidance values complementary and complete feedstuffs :

- pigs: 50 ppb
- poultry: 100 ppb

OTA (Ochratoxin A)



LEVEL 3

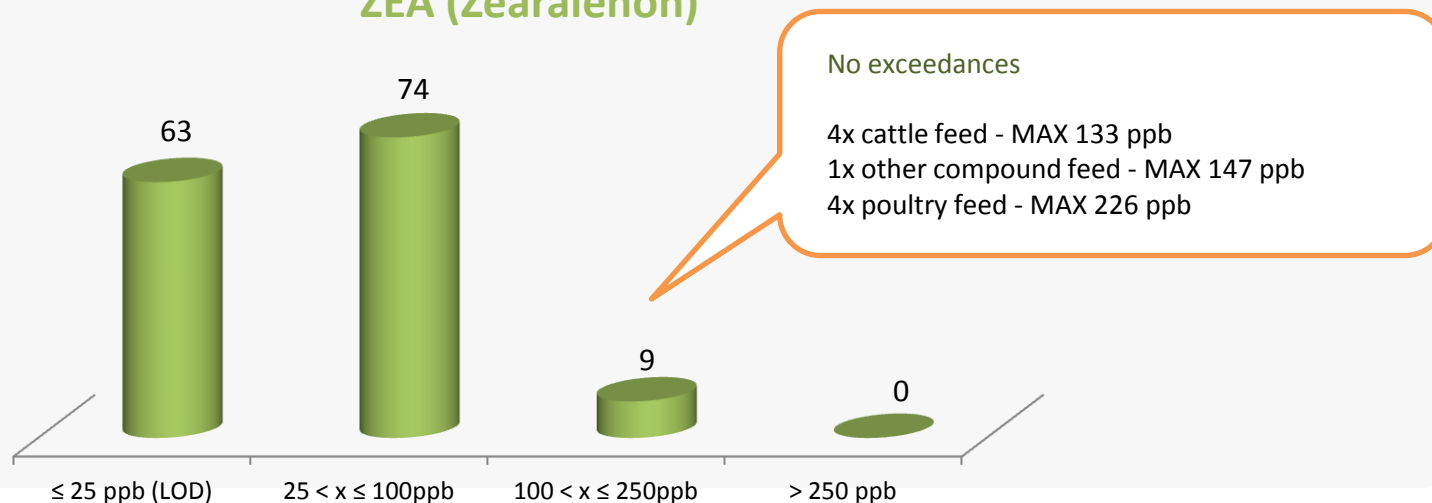
Mycotoxins

• ZEA (zearalenon)

Recommendation 2006/576 → guidance values complementary and complete feedstuffs :

- piglets, gilts: 100 ppb
- sows, fattening pigs: 250 ppb
- calves, dairy cattle, sheep, goats: 500 ppb


ZEA (Zearalenon)



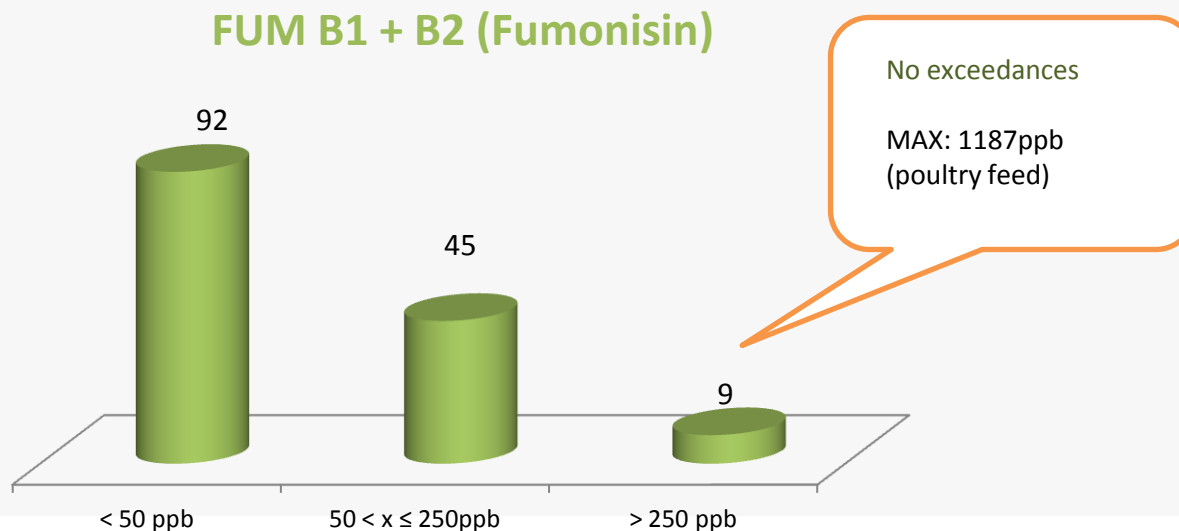
LEVEL 3

Mycotoxins

• FUM B1 + FUM B2 (Fumonisin)

 Recommendation 2006/576 → guidance values complementary and complete feedstuffs :

- pigs, horses, rabbits, pets: 5000 ppb
- poultry, calves, lambs, baby goats: 20 000 ppb
- adult ruminants: 50 000 ppb



LEVEL 3

Mycotoxins

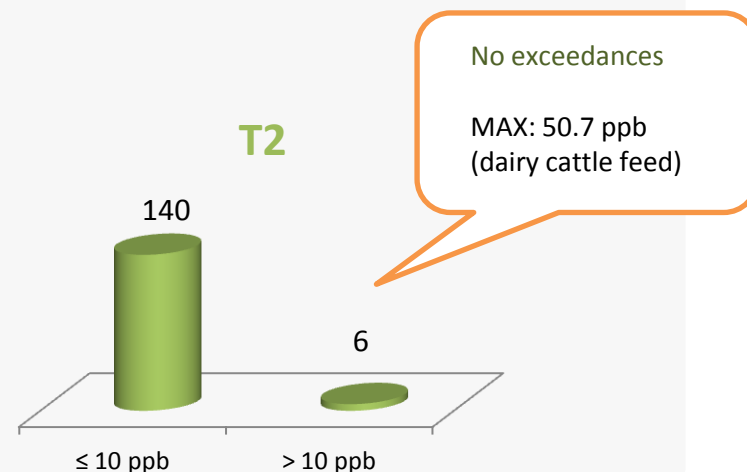
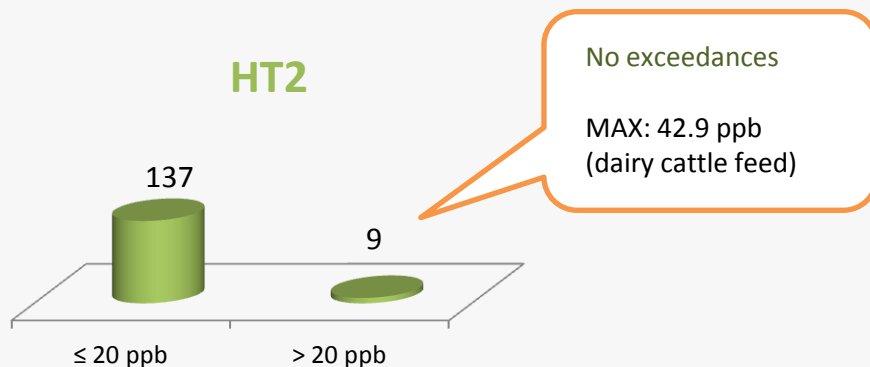
• T2, HT2

Action limits FASFC: FEED T2/HT2

- Compound feed poultry: 400 ppb
- Compound feed fattening pigs: 500 ppb
- Compound feed piglets: 200 ppb
- Compound feed calves: 200 ppb

Recommendation 2013/165: T2+HT2

- Compound feed: 250 ppb



LEVEL 3

OVERVIEW

- **Compound feed** – production
 - Mycotoxins
 - **Salmonella**
- **Mineral feed** – production
 - Heavy metals

LEVEL 3

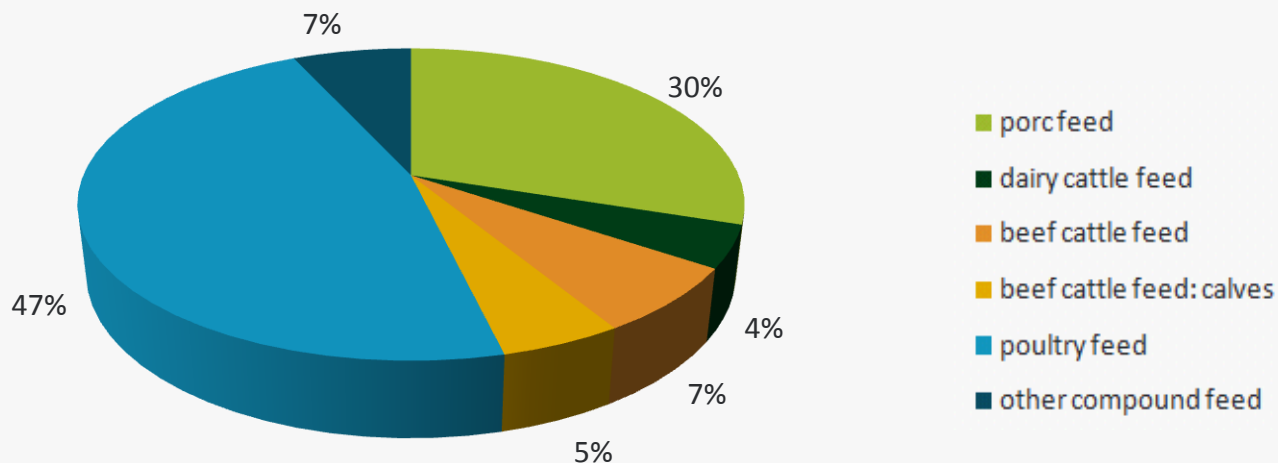
Salmonella

COMPOUND FEED – Production

Salmonella: Planned: 149 → Realised: **160**

Objective: 50% poultry feed, 30 % pig feed, 20% cattle feed (dairy cattle, beef cattle, calves)

Salmonella in compound feed



LEVEL 3

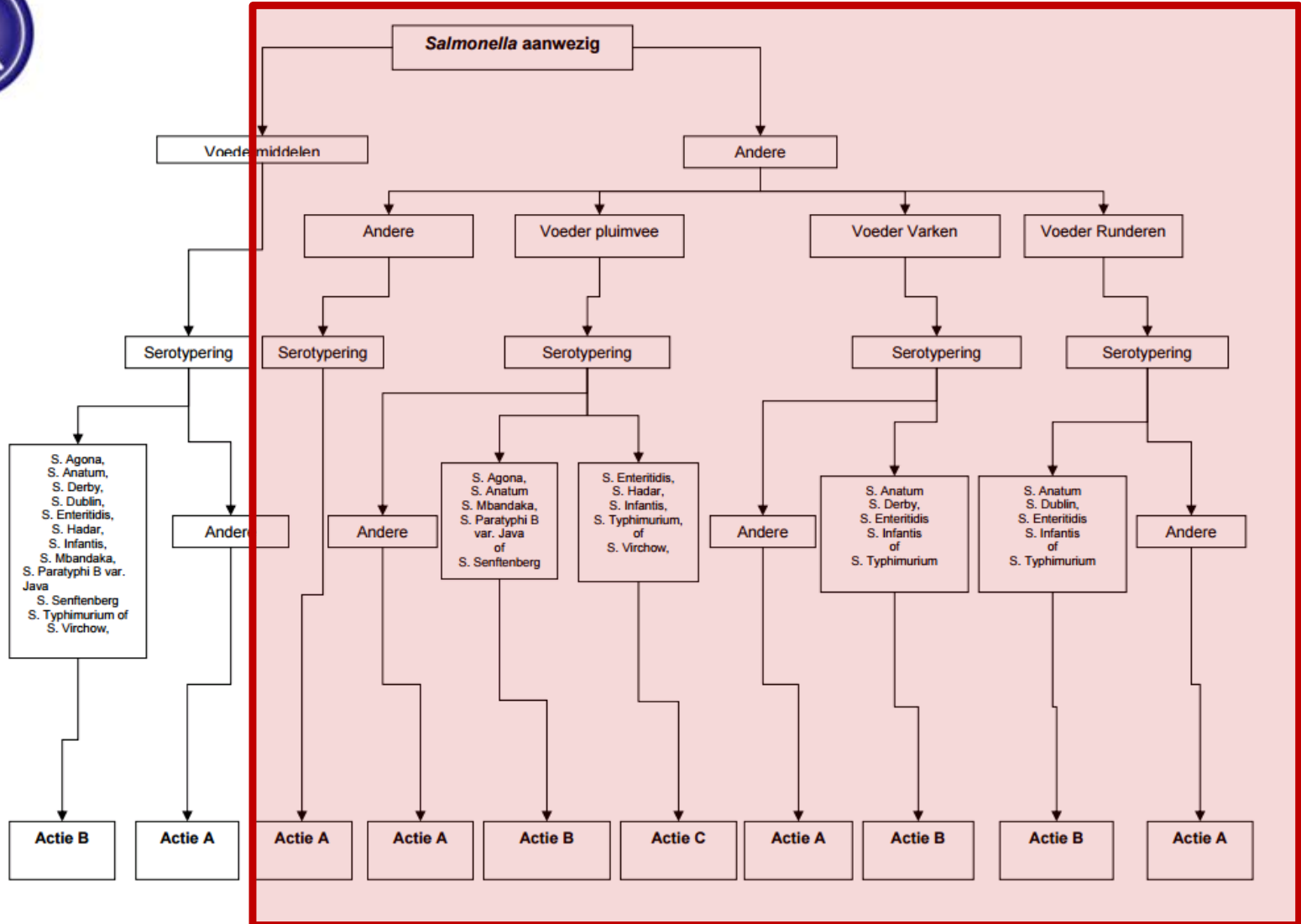
Salmonella

- **SALMONELLA**



Standard: absence in 25 g

- ✓ 159 results → Salmonella absent in 25 g
- ✓ 1 result → Salmonella present in 25 g
 - S. I 3,19:-:- (enterica) in poultry feed → *action A*





Actie	Bij landbouwer	Bij mengvoederfabrikant	Bij handelaar/fabrikant grondstoffen
A	Voedermiddelen & mengvoeders: <ul style="list-style-type: none"> - Onderzoek bij de landbouwer - Onderzoek leverancier/fabrikant - Waarschuwing² 	Voedermiddelen & mengvoeders: <ul style="list-style-type: none"> - Onderzoek bron + maatregelen - Onderzoek bij leverancier/fabrikant - Waarschuwing² 	Voedermiddelen & mengvoeders: <ul style="list-style-type: none"> - Onderzoek bron + maatregelen - Onderzoek bij leverancier/fabrikant - Waarschuwing²
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C	Mengvoeders (4) <ul style="list-style-type: none"> - Beslagname van de voeders - Informatie PRI - Onderzoek bij de landbouwer - Afhankelijk van het onderzoek, maatregelen ter voorkoming van hercontaminatie op het bedrijf (reiniging, ontsmetting) - Onderzoek bij leverancier/fabrikant - Waarschuwing² 	Mengvoeders (3) <ul style="list-style-type: none"> - Beslagname + recall - Behandeling + bewijs afwezigheid - Informatie afnemers + controle hierop - Informatie PRI - Onderzoek bron + maatregelen - RASFF indien noodzakelijk - Waarschuwing² 	

² Waarschuwing (WS) t.a.v. de verantwoordelijke voor de besmetting. Indien de verantwoordelijk niet kan worden aangeduid WS aan diegene bij wie het monster werd genomen. Een waarschuwing zal steeds opgevolgd worden met een nieuwe monstername binnen 3 maand. Een 2de waarschuwing zal niet noodzakelijk aanleiding geven tot een PV wanneer de 2 besmettingen niet gerelateerd zijn.

LEVEL 3

OVERVIEW

- **Compound feed** – production
 - Mycotoxins
 - Salmonella
- **Mineral feed** – production
 - Heavy metals

LEVEL 3

Heavy metals

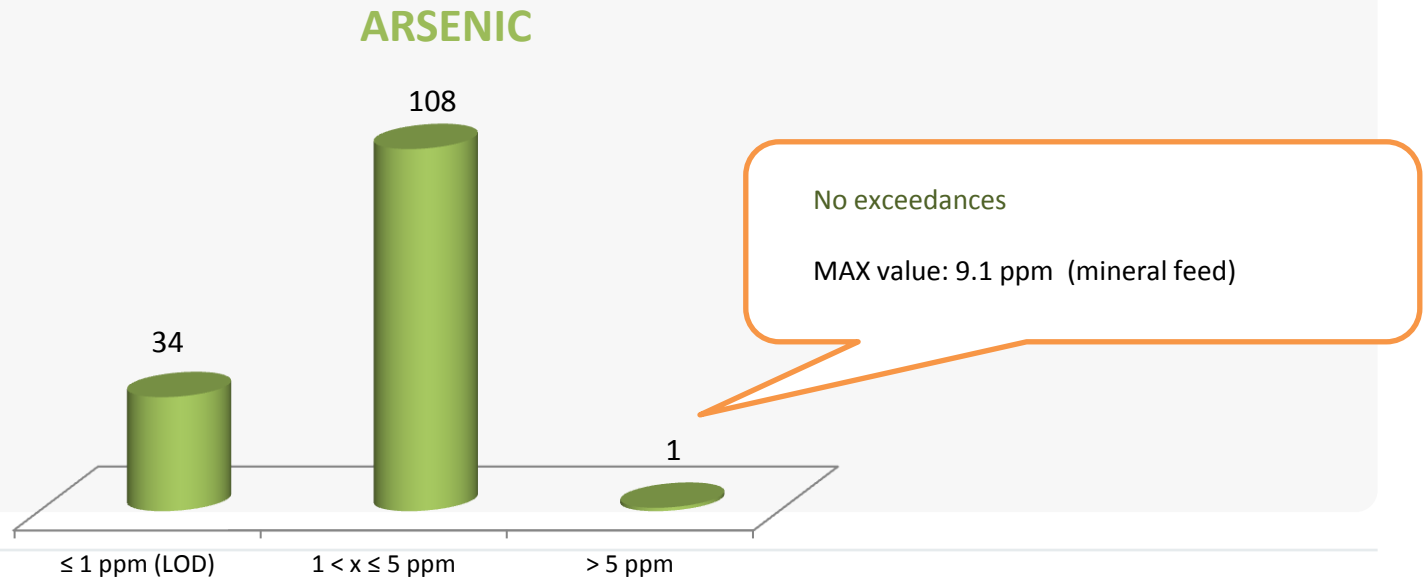
MINERAL FEED – Production

4 heavy metals: Planned: 144 → Realised: **143**

- ARSENIC**



Directive 2002/32 standard mineral feed: 12 ppm (+ exceptions!)



LEVEL 3

Heavy metals

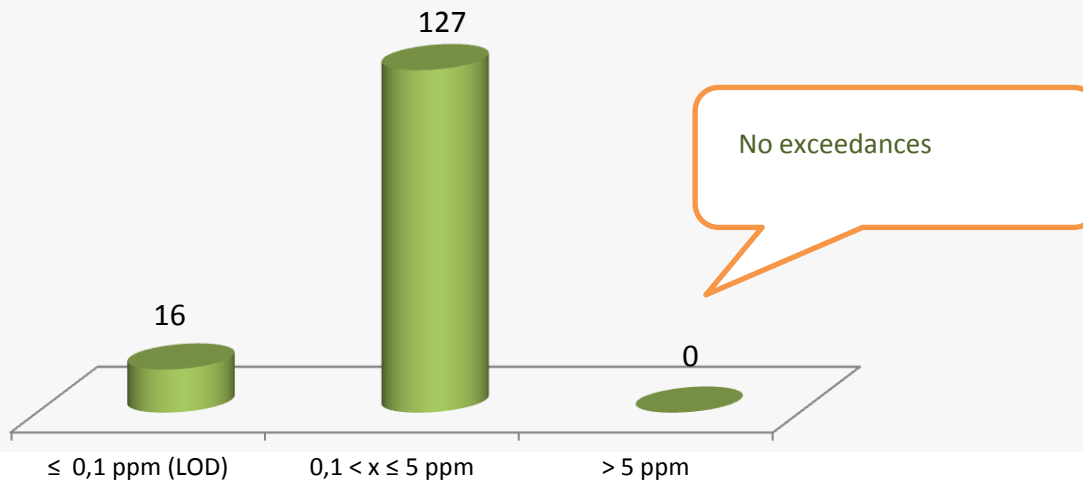
MINERAL FEED – Production

- CADMIUM**



*Directive 2002/32 standard mineral feed: 5 ppm
(depends on the phosphorus level)*

CADMIUM



LEVEL 3

Heavy metals

- **MERCURY**



Directive 2002/32 Standard mineral feed: 0.2 ppm

✓ **No exceedances**

all results 143 < LOD (0.05 ppm)

LEVEL 3

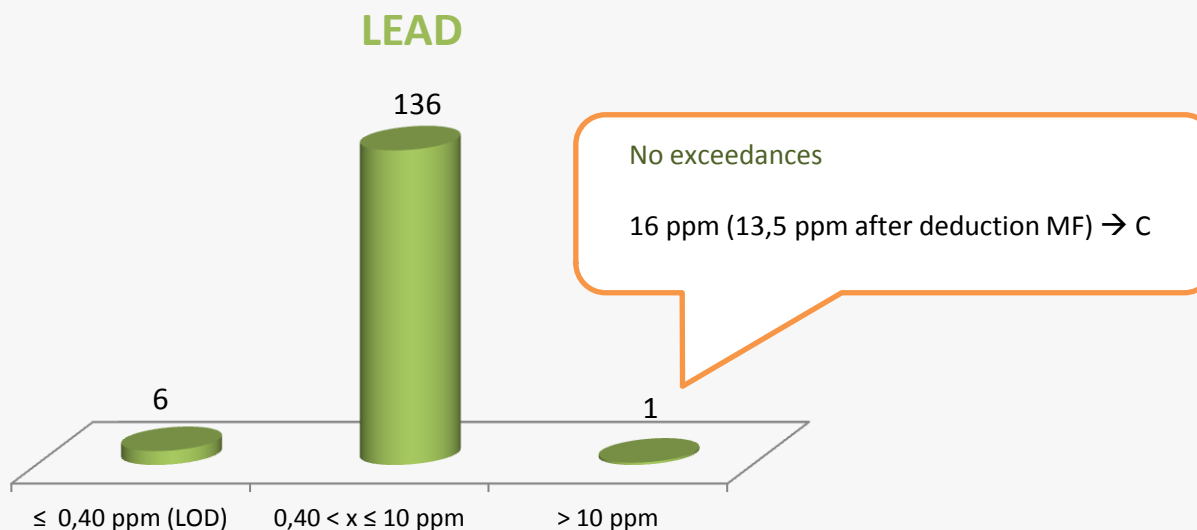
Heavy metals

- **LEAD**



Directive 2002/32 Standard mineral feed: 15 ppm

- Except «long-term supply particular nutritional purposes»: 60 ppm



Results - OVERVIEW NON-CONFORMITIES

- Level 1
- Level 2
- Level 3



Plan 2016 – OVERVIEW non-conformities

LEVEL 1

No exceedances



LEVEL 2

parameter	feed	result	Standard /guidance value/MRL
T2 + HT2	Maize (Ukraine)	281.4 ppb	200 ppb (guidance value)
T2 + HT2	Maize (European, non-EU)	297 ppb	200 ppb (guidance value)
Hydrocyanic acid	Linseed (BE)	289 ppm	250 ppm (standard)
Ergot	Rye (FR)	0.13% m/m	0.10% m/m (standard)
Dichlorvos	Spelt (BE)	0.032 mg/kg	0.01 mg/kg (MRL)
Tebuconazole	Spelt (FR)	1.0310 mg/kg	0.1 mg/kg (MRL)
Salmonella Stourbridge	Rapeseed (BE)	present in 25 g	absent in 25 g (standard)
Salmonella species	Colza and rapeseed feed	present in 25 g	absent in 25 g (standard)

LEVEL 3

parameter	feed	result	Standard /guidance value/MRL
Salmonella Subspecies I (enterica) Formule: I 3,19:-:-	Poultry feed	present in 25 g	absent in 25 g (standard)

Plan 2016 – Results www.bemefa.be

- 1) **Company** results (individual + sector)
- 2) **Anonymous overview** of **all** results
(own company + other manufacturers)
- 3) **Sector overview**: Treatment and summary

Want to
know more?



Thank you for your attention!

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