

## BEMEFA - Sector based monitoring plan – Results 2014



01/03/2016

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- Global monitoring plan 2014
- Planning 2014
- Realised analyses 2014

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- Level 1
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## Introduction

- Global monitoring plan 2014
- Planning 2014
- Realised analyses 2014

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Monitoring plan 2014

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## Monitoring plan 2014 - GLOBAL

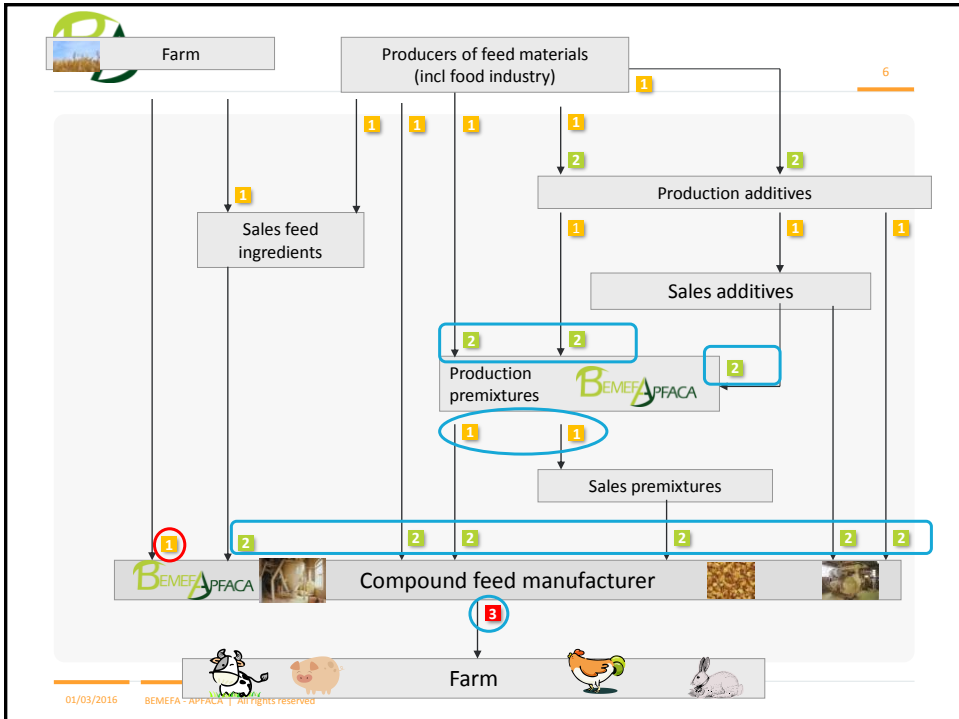
- **269** establishment units
- **2104** analyses planned at the start of the plan
- **2131** analyses realised → **100%**

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## Monitoring plan 2014 – OVERVIEW DIFFERENT LEVELS

- **LEVEL 1:** Premixtures production 1
- **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





## Overview Monitoring plan 2014 – PLANNING

(incl extra monitoring, analysis according to the advice of the WG HACCP, plan China)

	Premix- tures	TOTAL LEVEL 1	Additives	Feed materials	Premix- tures	Mineral feed (purchase)	TOTAL LEVEL 2	Compound feed	Mineral - feed (production)	TOTAL LEVEL 3	TOTAL
4 heavy metals (As, Cd, Hg, Pb)	59	59	22	54	20	2	98		145	145	302
5 heavy metals (As, Cd, Hg, Pb, F)			8	33			41				41
Aflatoxin B1				70			70				70
Ambrosia				23			23				23
Antibiotics				24			24				24
Hydrocyanic acid				52			52				52
Dioxins and dioxinlike PCBs (other matrices) - day + 3			70	76	20	2	168				168
Dioxins and dioxinlike PCBs (fats & oils) - day + 2				33			33				33
enterobacteriaceae				6			6				6
Melamine			14	28			42				42
Ergot				19			19				19
Mycotoxins				356			356	149		149	505
Insoluble impurities				13			13				13
PAHs				76			76				76
Paraquat				10			10				10
PCB 24h - other matrices			27	37	20	2	86				86
PCB - animal fat				24			24				24
Pesticides			22	277			299				299
Salmonella				123			123	149		149	272
Fungi				39			39				39
<b>TOTAL</b>	<b>59</b>	<b>59</b>	<b>163</b>	<b>1373</b>	<b>60</b>	<b>6</b>	<b>1602</b>	<b>298</b>	<b>145</b>	<b>443</b>	<b>2104</b>
	LEVEL 1		LEVEL 2				LEVEL 3				


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## Overview Monitoring plan 2014 – REALISED ANALYSES

	# PLANNED analyses				# REALISED analyses			
	NIV 1	NIV 2	NIV 3	TOTAL	NIV 1	NIV 2	NIV 3	TOTAL
4 heavy metals (As, Cd, Hg, Pb)	59	98	145	302	59	107	144	310
5 heavy metals (As, Cd, Hg, Pb, F)		41		41		42		42
Aflatoxin B1		70		70		68		68
Ambrosia		23		23		23		23
Antibiotics		24		24		24		24
Hydrocyanic acid		52		52		53		53
Dioxins & dioxinlike PCBs (other matrices) - day + 3		168		168		167		167
Dioxins & dioxinlike PCBs (fats & oils) - day + 2		33		33		33		33
Enterobacteriaceae		6		6		6		6
Melamine		42		42		41		41
Ergot		19		19		19		19
Mycotoxins		356	149	505		354	154	508
Insoluble impurities		13		13		13		13
PAHs		76		76		76		76
Paraquat		10		10		7		7
PCB 24h - other matrices		86		86		86		86
PCB - animal fats		24		24		24		24
Pesticides		299		299		295		295
Salmonella		123	149	272		131	166	297
Fungi		39		39		39		39
	<b>59</b>	<b>1602</b>	<b>443</b>	<b>2104</b>	<b>59</b>	<b>1608</b>	<b>464</b>	<b>2131</b>

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## Results 2014

- Level 1
- Level 2
- Level 3

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## Results 2014

- Level 1
- Level 2
- Level 3

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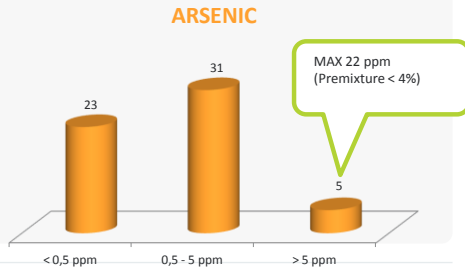
**LEVEL 1**

**Heavy metals**

Planned: 59 → Realised: **59**

• **ARSENIC**

- Directive 2002/32  
• No standard for premixtures  
• Standard complete feed: 2 ppm (+ exceptions)

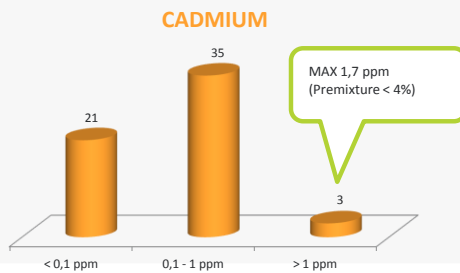


**LEVEL 1**

**Heavy metals**

• **CADMIUM**

- Directive 2002/32  
• Standard premixtures: 15 ppm



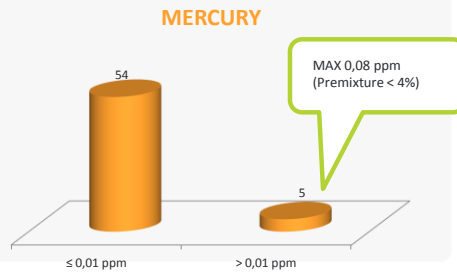


**LEVEL 1**

**Heavy metals**

• **MERCURY**

- ⚖ Directive 2002/32
- No standard for premixtures
- Standard compound feed: 0,1 ppm (+ exceptions)

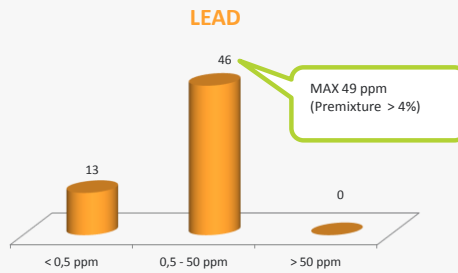



**LEVEL 1**

**Heavy metals**

• **LEAD**

- ⚖ Directive 2002/32
- Standard premixtures: 200 ppm





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## Results 2014

- Level 1
- Level 2
- Level 3

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Monitoring plan 2014– LEVEL 2

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## 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

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**LEVEL 2**


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

**OVERVIEW**

- **Premixtures – purchase**
  - Heavy metals
  - Dioxins & dioxin-like PCBs
  - PCBs
- **Mineral feed – purchase**
  - Heavy metals
  - Dioxins & dioxin-like PCBs
  - PCBs

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**LEVEL 2**

**FEED MATERIALS - purchase**

**Heavy metals**

**4 heavy metals: Planned: 54 → Realised: 54**

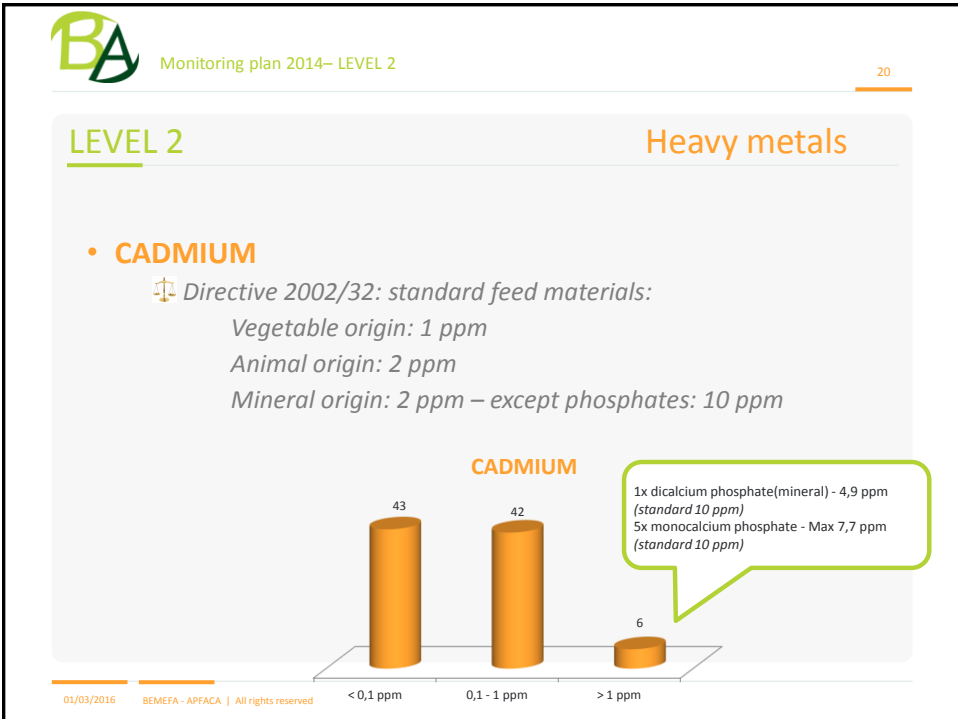
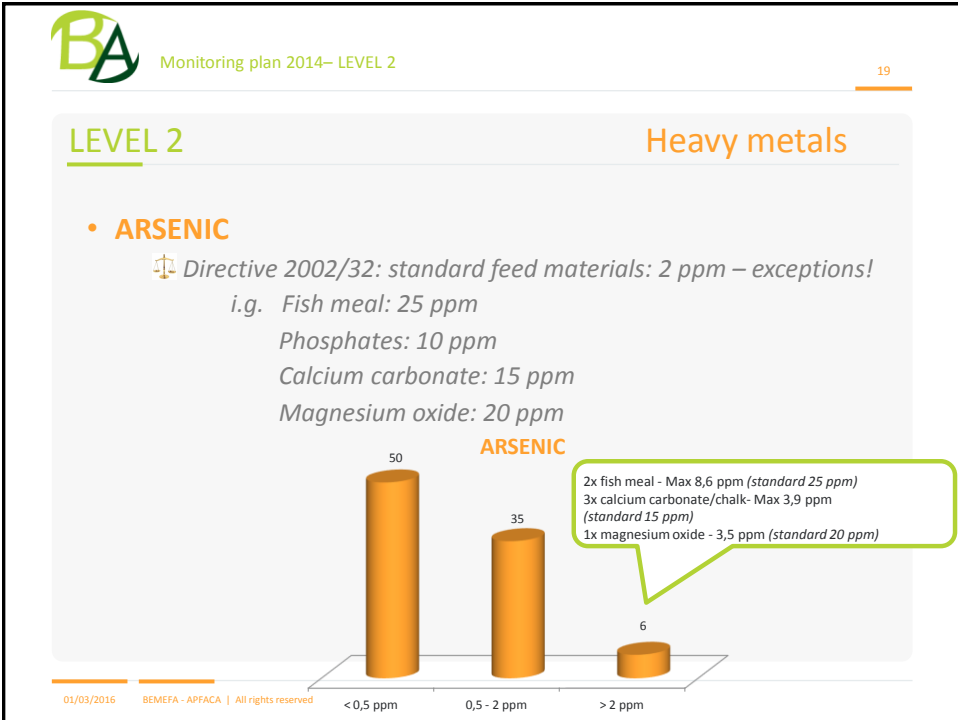
**5 heavy metals: Planned: 33 → Realised : 37**

**As, Cd, Hg, Pb: 54 + 37 = 91 results**

**F: 37 results**

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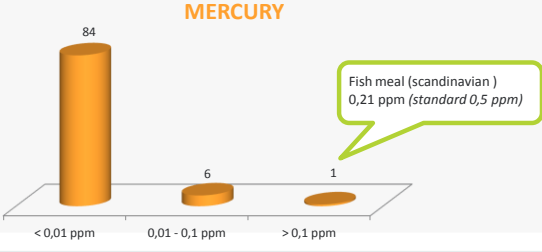
**BA** Monitoring plan 2014– LEVEL 2 21

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**LEVEL 2** Heavy metals

- MERCURY**
  -  Directive 2002/32: standard feed materials : 0,1 ppm – exceptions!  
 Fish and other water animals + products derived thereof : 0,5 ppm  
 Calcium carbonate : 0,3 ppm

**MERCURY**




Concentration Range	Number of Samples
< 0,01 ppm	84
0,01 - 0,1 ppm	6
> 0,1 ppm	1

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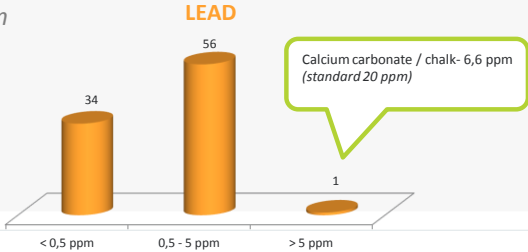
**BA** Monitoring plan 2014– LEVEL 2 22

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**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

**LEAD**



Concentration Range	Number of Samples
< 0,5 ppm	34
0,5 - 5 ppm	56
> 5 ppm	1

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**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*
    - *Calciumcarbonaat : 350 ppm*
    - *Magnesium oxide : 600 ppm*

6x monocalcium phosphate - Max 1.000 ppm (*standard 2.000 ppm*)  
 1x dicalcium phosphate (mineral) - 490 ppm (*standard 2.000 ppm*)  
 2x Magnesium oxide - Max 663 ppm (deduction measurement error- 597 ppm (*standard 600 ppm*))

1x dicalcium phosphate (mineral) - 1.100 ppm  
 3x monocalciumphosphate- Max 1.700 ppm (*standard 2.000 ppm*)

Concentration Range (ppm)	Number of Samples
< 10 ppm	7
10 - 150 ppm	17
150 - 1.000 ppm	9
> 1.000 ppm	4

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**LEVEL 2** Heavy metals

**PREMIXTURES + MINERAL FEED - purchase**

**4 heavy metals: Planned: 22 → Realised: 22**

- ✓ Premixtures non-BE manufacturer: 3
- ✓ Premixtures BE manufacturer: 17
- ✓ Mineral feed: 2

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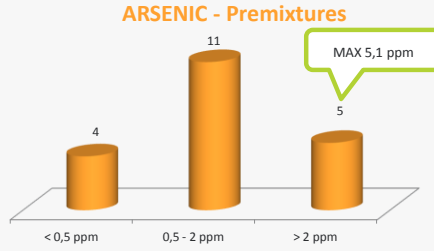
**LEVEL 2**

**Heavy metals**

• **ARSENIC**

⚖ Directive 2002/32: No standard for premixtures  
 Complete animal feed: 2 ppm  
 Mineral feed: 12 ppm

✓ Premixtures:



✓ Mineral feed: 2 results → Max 1,2 ppm



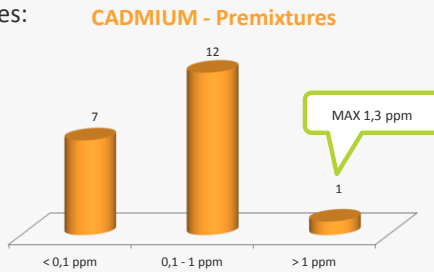
**LEVEL 2**

**Heavy metals**

• **CADMIUM**

⚖ Directive 2002/32: standard premixtures: 15 ppm  
 Standard mineral feed: 5 ppm (except if ≥ 7% phosphorus)

✓ Premixtures:



✓ Mineral feed: 2 results → Max 1 ppm

**BA** Monitoring plan 2014– LEVEL 2 27

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**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 → < 0,1 ppm  
 ✓ Mineral feed: 2 results → Max 0,02 ppm

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**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 - Premixtures**

Lead Concentration Range	Number of Results
< 1 ppm	6
1 - 5 ppm	13
> 5 ppm	1
  - ✓ Mineral feed: 2 results → Max 1,6 ppm

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**LEVEL 2**
**Heavy metals**

**ADDITIVES - purchase**

**4 heavy metals: Planned: 30 → Realised: 36**

Binders and trace elements

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**LEVEL 2**
**Heavy metals**

- **ARSENIC**

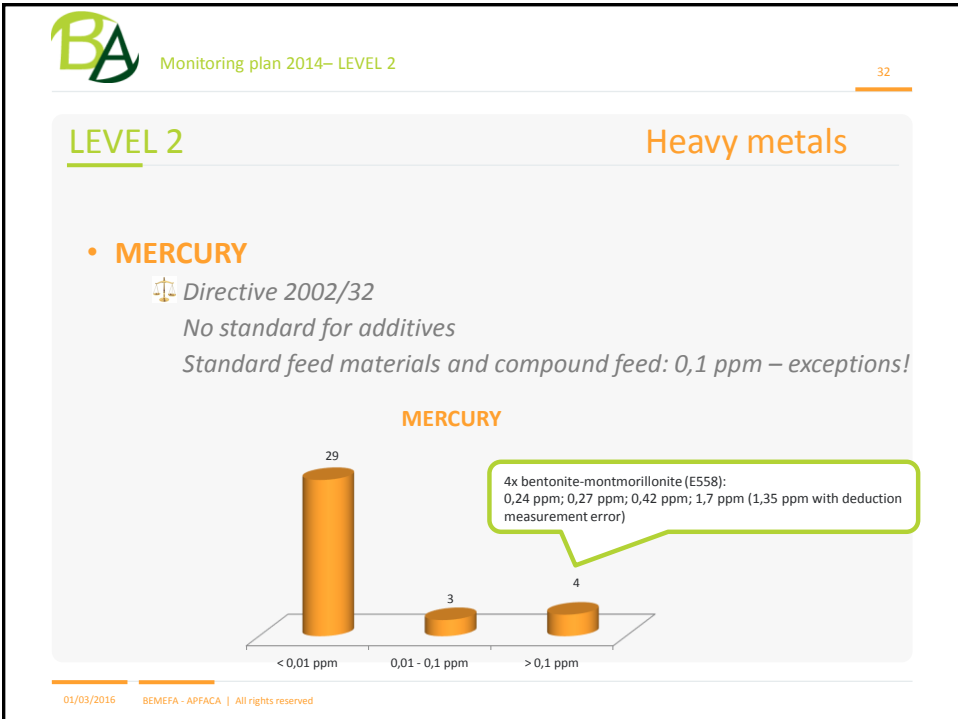
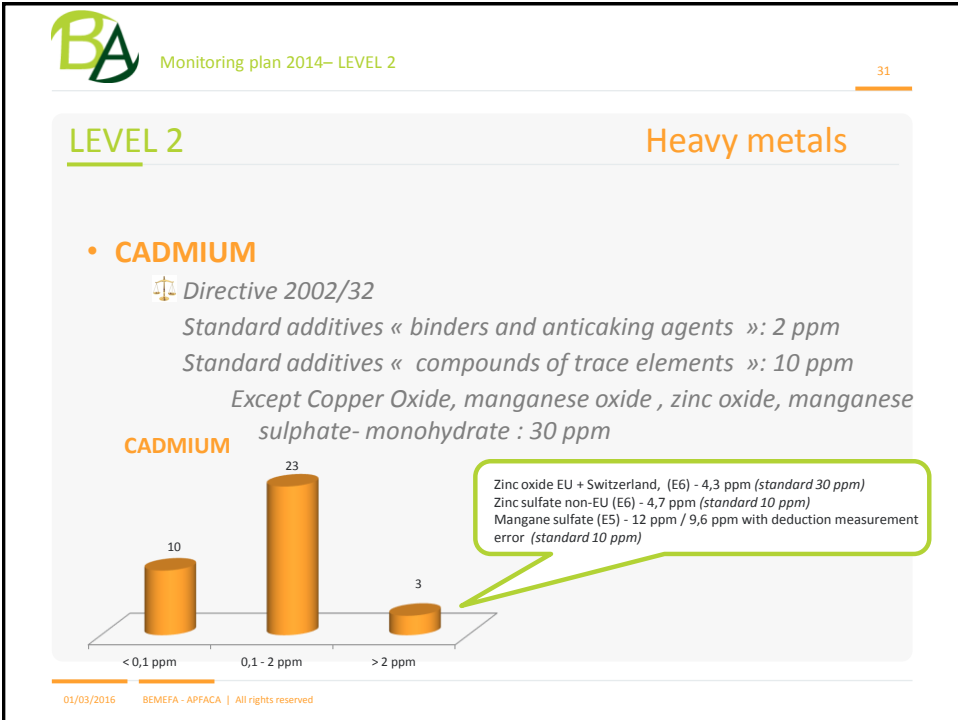
⚖ *Directive 2002/32:*  
*Standard additives « compounds of trace elements »: 30 ppm*  
*Exceptions: Copper Oxide, manganese oxide, zinc oxide : 100 ppm*  
*and copper sulphate pentahydrate, copper carbonate : 50 ppm*

**ARSENIC**

Concentration Range	Number of Additives
< 0,5 ppm	16
0,5 - 30 ppm	19
> 30 ppm	1

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LEVEL 2

Heavy metals

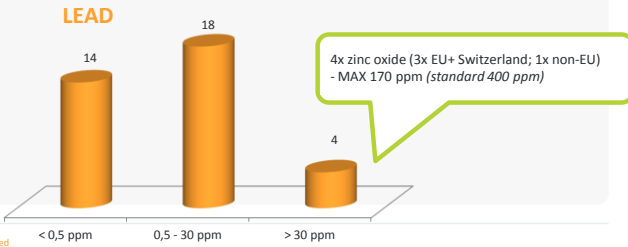
• LEAD



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  
and manganese oxide, iron carbonate, copper carbonate: 200 ppm



LEVEL 2

Heavy metals

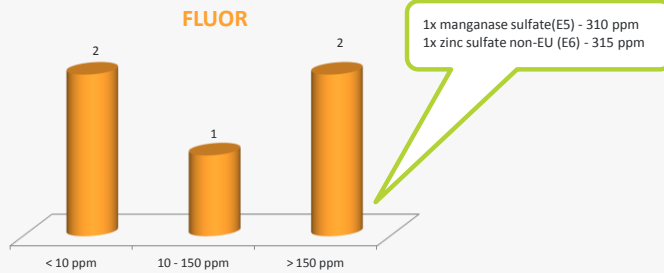
• FLUORINE




Directive 2002/32

No standard for additives

Standard feed materials and compound feed: 150 ppm – exceptions!




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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

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LEVEL 2
**Dioxins & dioxin-like PCBs**

**Dioxins & dioxin-like PCBs:**

**Planned: 201 → Realised: 200**

- ✓ Feed materials: 108
- ✓ Premixtures & mineral feed: 22
- ✓ Additives: 70

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## LEVEL 2

## Dioxins & dioxin-like PCBs

### FEED MATERIALS - purchase

#### • DIOXINS

- ✓ 106 results  $\leq 0,5$  ng/kg
- ✓ 2 results  $> 0,5$  ng/kg:
  - 1x fish oil: 1,15 ng/kg \*\*
  - 1x hydrolysed fish protein > 20% fat: 1,36 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 (land animals) (incl. milk(products), eggs, egg products)	0,5	0,75
Fish oil	4	5
Fish and other byproducts	0,75	1,25
Fish proteins, hydrolysed, > 20% fat	1,25	1,75



## LEVEL 2

## Dioxins & dioxin-like PCBs

#### • DIOXIN-LIKE PCBs

- ✓ 105 results  $\leq 0,35$  ng/kg
- ✓ 3 results  $> 0,35$  ng/kg:
  - 1x ox fat: 0,41 ng/kg
  - 1x hydrolysed fish protein > 20% fat: 1,86 ng/kg \*\*\*
  - 1x fish oil: 2,71 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 (land animals) (incl. milk(products), eggs, egg products)	0,35	
Fish oil	11	
Fish and other byproducts	2	
fat	5	

**BA** Monitoring plan 2014– LEVEL 2 39

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**LEVEL 2** **Dioxins & dioxin-like PCBs**

- **SUM OF DIOXINS & DIOXIN-LIKE PCBs**

- ✓ 106 results ≤ 1 ng/kg
- ✓ 2 results > 1 ng/kg:
  - 1x hydrolysed fish protein > 20% fat: 3,21 ng/kg \*\*\*
  - 1x fish oil: 3,86 ng/kg \*\*

* (ng WHO-PCCD/F-TEQ/kg)	Action limit 2002/32 *	Standard 2002/32 *
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 (landanimals) (incl. milk(products), eggs, egg products)		1,25
Fish oil		20
Fish and other byproducts		4
Fishproteins, hydrolysed, > 20% fat		9

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**BA** Monitoring plan 2014– LEVEL 2 40

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**LEVEL 2** **Dioxins & dioxin-like PCBs**


**PREMIXTURES & MINERAL FEED - purchase**

- **DIOXINS**

- ✓ All 22 results ≤ 0,5 ng/kg
- ✓ MAX level 0,26 ng/kg: premixture < 4%

* (ng WHO-PCCD/F-TEQ/kg)	Action limit 2002/32 *	Standard 2002/32 *
Premixtures	0,5	1
Mineral feed -> compound feed		0,75

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Monitoring plan 2014– LEVEL 2

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**LEVEL 2**

Dioxins & dioxin-like PCBs

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- **DIOXIN-LIKE PCBs**

- ✓ All 22 results ≤ 0,35 ng/kg
- ✓ Max level 0,34 ng/kg:  
premixture < 4% \*°

Action level	2002/32 *	Standard 2002/32 *
* (ng WHO-PCCD/F-TEQ/kg)		
Premixtures	0,35	
Mineral feed -> compound feed	0,5	

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Monitoring plan 2014– LEVEL 2

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**LEVEL 2**

Dioxins & dioxin-like PCBs

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- **SUM OF DIOXINS & DIOXIN-LIKE PCBs**

- ✓ All 22 results ≤ 1,5 ng/kg
- ✓ Max level 0,49 ng/kg:  
premixture < 4% \*°

Action level	2002/32 *	Standard 2002/32 *
* (ng WHO-PCCD/F-TEQ/kg)		
Premixtures		1,5
Mineral feed -> compound feed		1,5

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**BA** Monitoring plan 2014– LEVEL 2 43

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**LEVEL 2** Dioxins & dioxin-like PCBs

**ADDITIVES - purchase**

- DIOXINS**
  - ✓ All 70 results ≤ 0,5 ng/kg
  - ✓ Max level: 0,425 ng/kg: tocopherol extracts nat. origin (E306) °°

	Action Level	Standard 2002/32
* (ng WHO-PCCD/F-TEQ/kg)	2002/32 *	*
“binders” and “anticaking agents”	0,5	0,75
“compounds of trace elements”	0,5	1

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**LEVEL 2** Dioxins & dioxin-like PCBs

- DIOXIN-LIKE PCBs**
  - ✓ 69 results ≤ 0,35 ng/kg
  - ✓ 1 result > 0,35 ng/kg: 0,351 ng/kg tocopherol extracts nat. origin (E306)

	Action limit	Standard 2002/32
* (ng WHO-PCCD/F-TEQ/kg)	2002/32 *	*
“binders” and “anticaking agents”	0,5	
“compounds of trace elements”	0,35	

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Monitoring plan 2014– LEVEL 2

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**LEVEL 2**

**Dioxins & dioxin-like PCBs**

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- **SUM OF DIOXINS & DIOXIN-LIKE PCBs**
  - ✓ All 70 results ≤ 1,5 ng/kg
  - ✓ Max level: 0,67 ng/kg:  
tocopherol extracts nat. origin (E306) °°

	Action level	Standard
	2002/32 *	2002/32 *
* (ng WHO-PCCD/F-TEQ/kg)		
“binders” and “anticaking agents”		1,5
“compounds of trace elements”		1,5

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Monitoring plan 2014– LEVEL 2

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**LEVEL 2**

**OVERVIEW**

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- **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

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**BA** Monitoring plan 2014– LEVEL 2 47

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**LEVEL 2**
**PCBs**

**PCBs: Planned: 110 → Realised: 108**

- ✓ Feed materials: 61
- ✓ Premixtures & mineral feed: 22
- ✓ Additives: 25

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**BA** Monitoring plan 2014– LEVEL 2 48

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**LEVEL 2**
**PCBs**

**FEED MATERIALS - purchase**

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


- ✓ 59 results ≤ 10 ng/g,  
all 59 < LOD
- ✓ 2 results > 10 ng/g:
  - 2x fish oil  
(Max 21,7 ng/g)

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

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Monitoring plan 2014– LEVEL 2

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**LEVEL 2**

PCBs


**PREMIXTURES & MINERAL FEED - purchase**

- **Sum of non dioxin-like PCBs**
  - ✓ 22 results < 10 ng/g,
    - whereof 20 < LOD
    - Max 4 ppb (premixture (< 4 %) – purchase from Belgian manufacturer)

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

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Monitoring plan 2014– LEVEL 2

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**LEVEL 2**

PCBs


**ADDITIVES - purchase**

- **Sum of non dioxin-like PCBs**
  - ✓ 24 results ≤ 6 ng/g (< LOD)
  - ✓ 1 result < 36 ng/g:
    - "emulsifier" (no standard)

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

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**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

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**LEVEL 2** **Melamine**

**Melamine: Planned: 42 → Realised: 41**

**FEED MATERIALS - purchase**

- Animal proteins (fishmeal, milk and whey powder), yeast, wheatgluten

**ADDITIVES - purchase**

- Nutritional Additives
- ! Origin: China

*⚖ Directive 2002/32: standard for animal feed: 2,5 ppm except a few additives (urea,...): no standard*

✓ All 41 results < 2,5 ppm

- Max 0,14 ppm (urea)

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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

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LEVEL 2
Pesticides

**Pesticides: Planned: 299 → Realised: 295**  
 + Planned: 10 analyses on **paraquat** → Realised: 7

✓ Feed materials: 281  
 ✓ Additives (other sensory additives): 21

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**LEVEL 2** Pesticides

**FEED MATERIALS - purchase**

**• Pesticides**


 Regulation 396/2005 (pesticides) ↗  
 Extensive uncertainty of measurement 50 %  
 → MRL exceedance if the detected level/2 > MRL

**! MRLs only for non processed products**  
 → MRL for processed products: use (CONVERSION)FACTORS


 taking into account

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

e.g. rice – rice bran

 [http://ec.europa.eu/sanco\\_pesticides/public](http://ec.europa.eu/sanco_pesticides/public)

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**LEVEL 2** Pesticides

**FEED MATERIALS - purchase**

**• Pesticides**

✓ 281 samples:

- In **171** samples: **NO pesticide residue** found
- In **110** samples: **at least 1 pesticide residue** found
  - ❖ Number of residues found in 1 sample: **1 → 14**
  - ❖ In these 110 samples : **55 different residues** found

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## LEVEL 2

## Pesticides

- ✓ 281 samples:
  - In **110** samples: **at least 1 pesticide residue** found
    - ❖ In these 110 samples : **55 different residues** found
      - *which feed materials?: + cf. following slides*

TOP 10	Number of cases
piperonyl-butoxyde	48
pirimifos-methyl	36
chlorpyrifos-methyl	22
deltamethrin	20
tebuconazole	19
cypermethrin	14
pyraclostrobin	14
diflubenzuron	11
imidacloprid	11
difenoconazole	7



## LEVEL 2

## Pesticides

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

piperonyl-butoxyde has been found in	#
Wheatgluten	7
Rice bran	7
Wheat bran	6
Short wheat flour	5
Maize, yellow, non EU	3
Triticale	3
Spelt	3
Maize DDGS (distillers grains by-products)-EU	3
Barley, barley diets, barley 6 rowed	2
Wheat	2
Broken maize	1
Wheat gluten meal	1
Wheat DDGS (distillers grains by-products)-EU	1
Rice branmeal	1
Citrus pulp	1
Soybean hulls	1
Rape seed fatty acids	1
	<b>48</b>



**LEVEL 2**

**Pesticides**

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

pirimifos-methyl has been found in	#
Wheatgluten	6
Wheat bran	5
Short wheat flour	4
Barley, barley diets, barley 6 rowed	3
Rice bran	3
Wheat	2
Maize, yellow, France	2
Maize, yellow, non EU	2
Maize DDGS (distillers grains by-products)-EU	2
Soybean oil (crude and refined)	2
Broken maize	1
Wheat gluten meal	1
Wheat germs	1
Toasted soybeans	1
Soybean hulls	1
	<b>36</b>



**LEVEL 2**

**Pesticides**

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

chlorpyrifos-methyl has been found in	#
Wheat bran	6
Wheatgluten	6
Barley, barley diets, barley 6 rowed	2
Maize, yellow, non EU	2
Short wheat flour	2
Broken maize	1
Wheat gluten meal	1
Maize DDGS (distillers grains by-products)-EU	1
Rape seed fatty acids	1
	<b>22</b>



**LEVEL 2**

**Pesticides**

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

deltamethrin has been found in	#
Wheat bran	5
Wheatgluten	5
Short wheat flour	3
Rice bran	3
Wheat	1
Triticale	1
Wheat gluten meal	1
Citrus pulp	1
	<b>20</b>



**LEVEL 2**

**Pesticides**

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

tebuconazole has been found in	#
Rice bran	6
Citrus pulp	6
Spelt	3
Wheatgluten	2
Wheat bran	1
Short wheat flour	1
	<b>19</b>





**LEVEL 2**

**Pesticides**

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

cypermethrin has been found in	#
Citrus pulp	4
Spelt	2
Wheatgluten	2
Wheat	1
Maize, yellow, non EU	1
Wheat bran	1
Short wheat flour	1
Maize DDGS (distillers grains by-products)-EU	1
Soybean hulls	1
	<b>14</b>



**LEVEL 2**

**Pesticides**

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

pyraclostrobin has been found in	#
Citrus pulp	11
Spelt	2
Barley, barley diets, barley 6 rowed	1
	<b>14</b>

diflubenzuron has been found in	#
Citrus pulp	11
	<b>11</b>

difenoconazole has been found in	#
Citrus pulp	4
Rice bran	2
Spelt	1
	<b>7</b>

imidacloprid has been found in	#
Citrus pulp	8
Rice bran	2
Spelt	1
	<b>11</b>

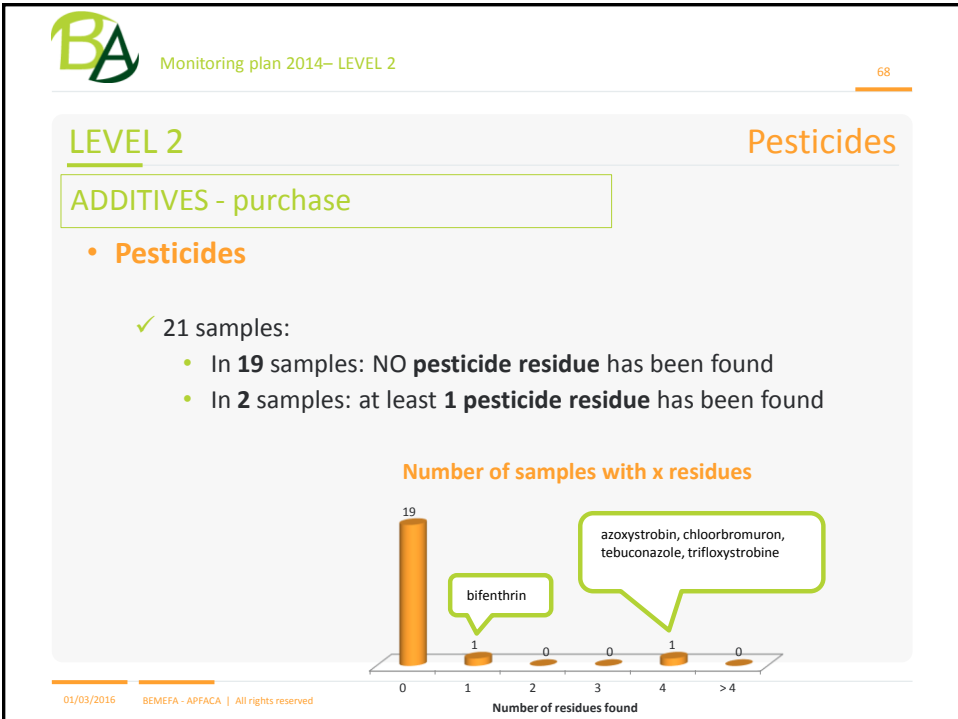
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## LEVEL 2 Pesticides

In which feed materials pesticide residues were found most frequently

Product-Feed material	Min. 1 pesticide residue has been found: frequency
Citrus pulp	15
Rice bran	14
Spelt	12
Wheatgluten	9
Soybean oil (crude and refined)	9
Barley, barley diets, barley 6 rowed	7
Wheat bran	7
Short wheat flour	7
Maize, yellow, non EU	6
Wheat	4
Maize DDGS (distillers grains by-products)-EU	3
Triticale	3
Soy fatty acids	2
Rape seed fatty acids	2
Maize, yellow, France	2
Wheat DDGS (distillers grains by-products)-EU	1
Rice branmeal	1
Wheat gluten meal	1
Wheat Germ	1
Toasted soybeans	1
Soybean hulls	1
Soy lecithin	1
Broken maize	1
<b>Total number of cases</b>	<b>110</b>

01/03/2015



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**LEVEL 2** Pesticides

FEED MATERIALS - purchase

ADDITIVES- purchase

- **Pesticides**

More information?  
 → OVERVIEW ANALYSIS RESULTS (anonymous):  
 Analysis > Results > Each Undesirable substance  
<http://www.bemefa.be/Analysis/AnonymousResults.aspx>

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**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

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**LEVEL 2** PAHs

**FEED MATERIALS - purchase**

**PAHs: Planned: 76 → Realised: 76**

 **FCA BT-01:**

✓ All 76 results ≤ 15 µg/kg

Product	Action limit (BaPEq µg/kg)	Rejection limit (BaPEq µg/kg)
Fats	15	50
Feed materials or side streams- to be transformed (humidity > 16%)	15	50
Feed materials or side streams- to be transformed (dry process)	15	50
Other feed materials or side streams- to be transformed	50	

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**LEVEL 2** OVERVIEW

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

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**LEVEL 2**
**Mycotoxins**

**FEED MATERIALS - purchase**

**Mycotoxins: Planned: 356 → Realised: 354**  
**Aflatoxin B1: Planned: 70 → Realised: 68**

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

**→ 354 + 68 = 422 results aflatoxin**  
**→ 354 results other mycotoxins**

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**LEVEL 2**
**Mycotoxins**

- **AFLATOXIN B1**  
⚖️ Standard (Directive 2002/32) feed materials: 20 ppb  
REMARK feed materials for dairy cattle feed or feed materials intended for direct delivery to farmers : 5 ppb

**AFLATOXIN B1**

Concentration Range (ppb)	Number of Samples	Details
< 1	408	
1 - 5	8	
5 - 20	5	1x peanutmeal, 1x maize DDGS, 3x rice bran
> 20	1	1x peeled peanuts (92 ppb), (73 ppb after deduction measurement error) RASFF 2014,0847

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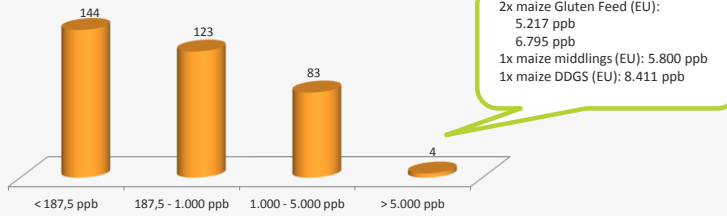
LEVEL 2

Mycotoxins

• DON (deoxynivalenol)

⚖ Recommendation 2006/576 → guidance value :  
cereals and cereal products : 8.000 ppb  
maize by-products : 12.000 ppb

DON (deoxynivalenol)



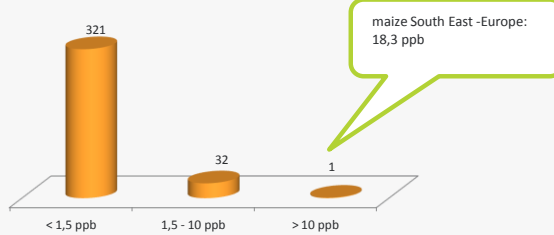
LEVEL 2

Mycotoxins

• OTA (ochratoxin A)

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

OTA (Ochratoxin A)



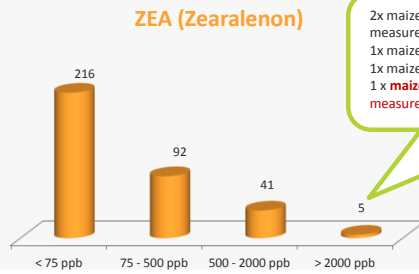


### LEVEL 2

### Mycotoxins

- ZEA (zearalenon)**

⚖ Recommendation 2006/576 → guidance value :  
cereals and cereal products : 2.000 ppb  
maize by-products : 3.000 ppb



2x maize gluten feed : MAX 3.848 ppb (2.998 ppb after deduction measurement error )  
1x maize gluten meal : 2.989 ppb  
1x maize screenings - 2.031 ppb  
1 x **maize BE dried** : 2.415 ppb (2.096 ppb after deduction measurement error)

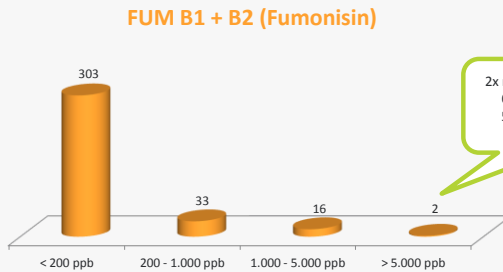


### LEVEL 2

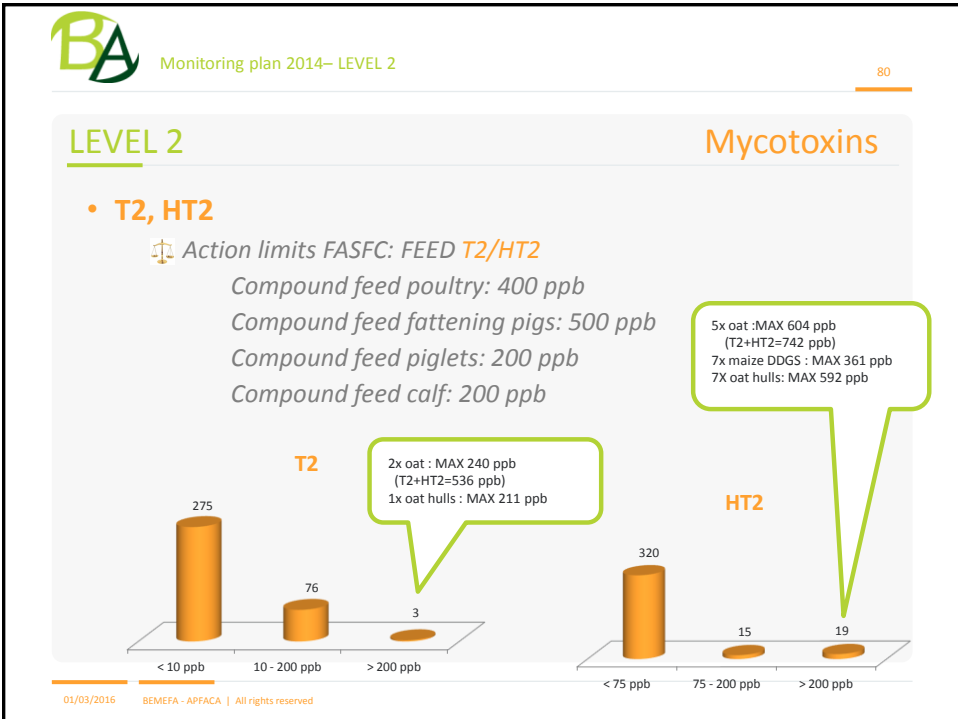
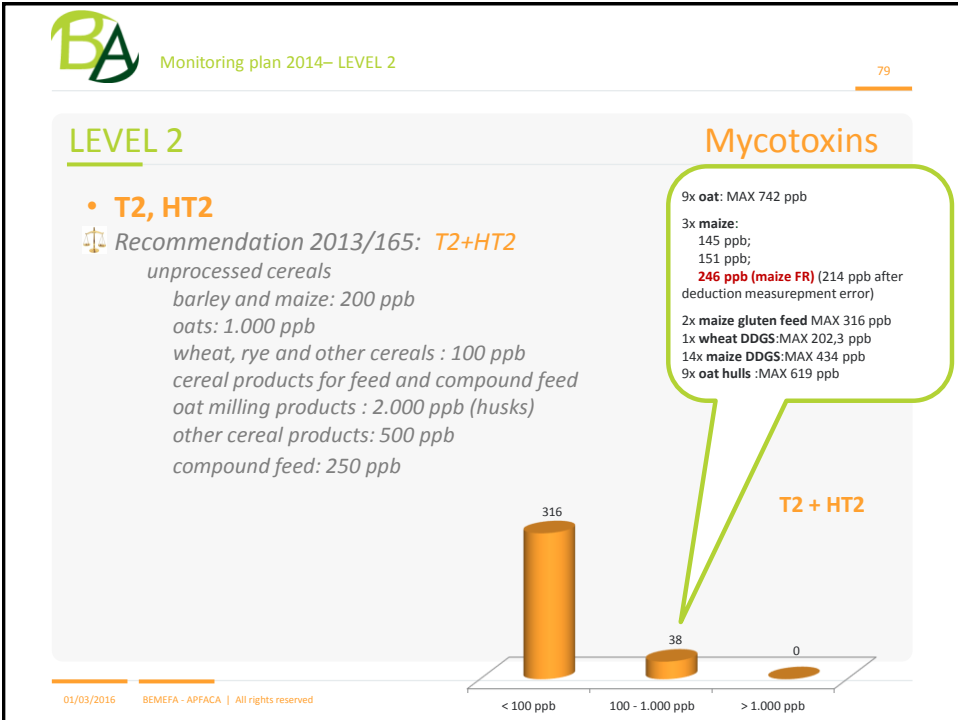
### Mycotoxins

- FUM B1 + FUM B2 (Fumonisin)**

⚖ Recommendation 2006/576 → guidance value:  
maize and maize by-products : 60.000 ppb



2x maize screenings (EU):  
6.136 ppb  
5.263 ppb





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**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

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**LEVEL 2**
**Ergot**

**FEED MATERIALS - purchase**

**Ergot: Planned: 19 → Realised: 19**  
*(1x Rye + 18x triticale)*


*Standard (Directive 2002/32): feed materials and compound feed containing unground grains : 0,10% (m/m) → 1.000 mg/kg*

**ERGOT**

Concentration Range (m/m)	Number of Samples
< 0,03%	17
0,03 - 0,1%	1
> 0,10%	1

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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

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LEVEL 2
Ambrosia


FEED MATERIALS- purchase

**Ambrosia: Planned: 23 → Realised: 23**  
*(oil seeds)*

 *Standard (Directive 2002/32):*  
*feed materials: 0,005% (m/m) → 50 mg/kg*  
*except millet and sorghum, indirect feeding: 0,020%*

✓ 23 results → all < 0,005%

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**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

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**LEVEL 2** **Hydrocyanic acid**

**FEED MATERIALS - purchase**

**Hydrocyanic acid** : Planned: 52 → Realised: **53**  
*in sorghum,  
 linseed, linseed expeller, linseed feed*

*! HPLC method (EN 16160)  
 >< EG 71250: interference sorghum, rape seed*

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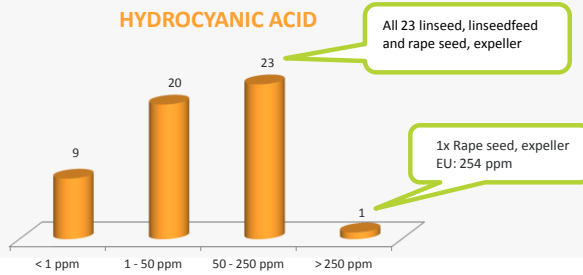


**LEVEL 2**

**Hydrocyanic acid**

• **Hydrocyanic acid**


- ⚖ *Standard (Directive 2002/32): feed materials: 50 ppm – exceptions!*
  - linseed 250 ppm*
  - linseedcake (expeller, meal): 350 ppm*
  - cassava products and almondcakes : 100 ppm*



**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


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**LEVEL 2**
**Salmonella**

**FEED MATERIALS - purchase**

**Salmonella: Planned: 123 → Realised: 133**

 *Standard: absence / 25g*

✓ 133 results → Salmonella absence in 25g

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**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

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**LEVEL 2** **Insoluble impurities**

**FEED MATERIALS - purchase**

**Insoluble impurities** : Planned: 13 → Realised: **13**  
(ox fat)

 *Standard (Reglementation 142/2011):*  
rendered ruminant fat (or mixtures containing rendered ruminant fat): 0,15% (% in weight)

✓ All 13 results < 0,10%

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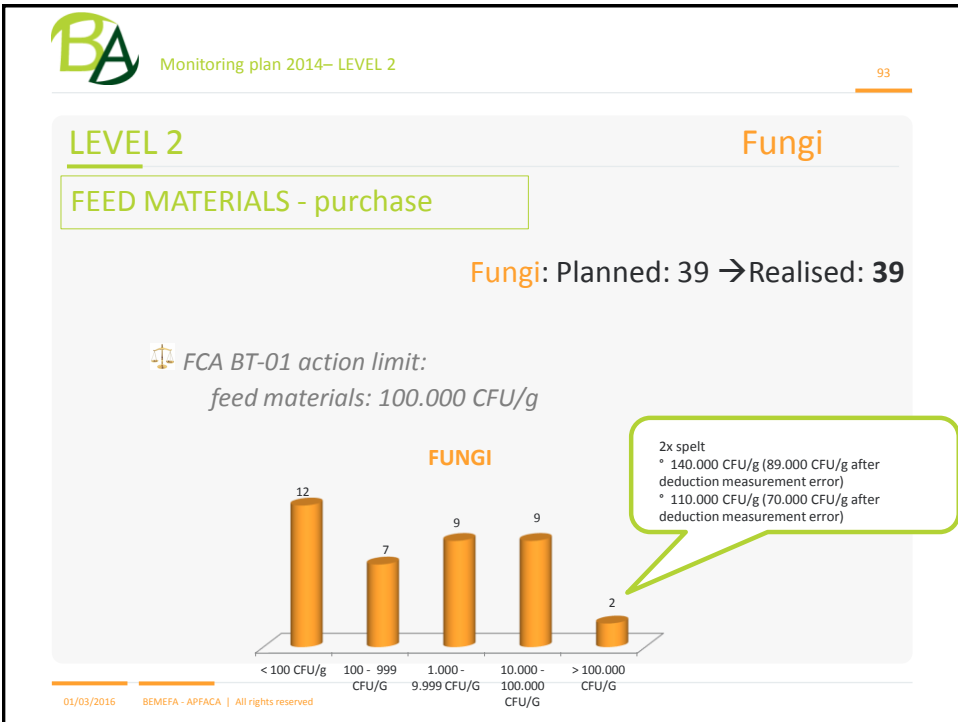
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**LEVEL 2** **OVERVIEW**

- **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

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- BA** Monitoring plan 2014– LEVEL 2 94
- 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
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**LEVEL 2** **Enterobacteriaceae**

**FEED MATERIALS - purchase**

**Enterobacteriaceae: Planned: 6 → Realised: 6**  
*Fishmeal, egg products*

 *FCA AT-11: 300 CFU/g*

- ✓ 4 results ≤ 0,10 CFU/g
- ✓ 2 results > 0,10 CFU/g:
  - 2x fishmeal: 20 CFU/g (1x Scandinavian, 1x Latin-American)

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**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

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LEVEL 2

Antibiotics

FEED MATERIALS - purchase


Antibiotics: Planned: 24 → Realised: 24

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

	Standard (ppb)	Results (ppb)
virginamycine	absent	< 25
decoquinat	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

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Results 2014

- Level 1
- Level 2
- Level 3

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**LEVEL 3** OVERVIEW

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

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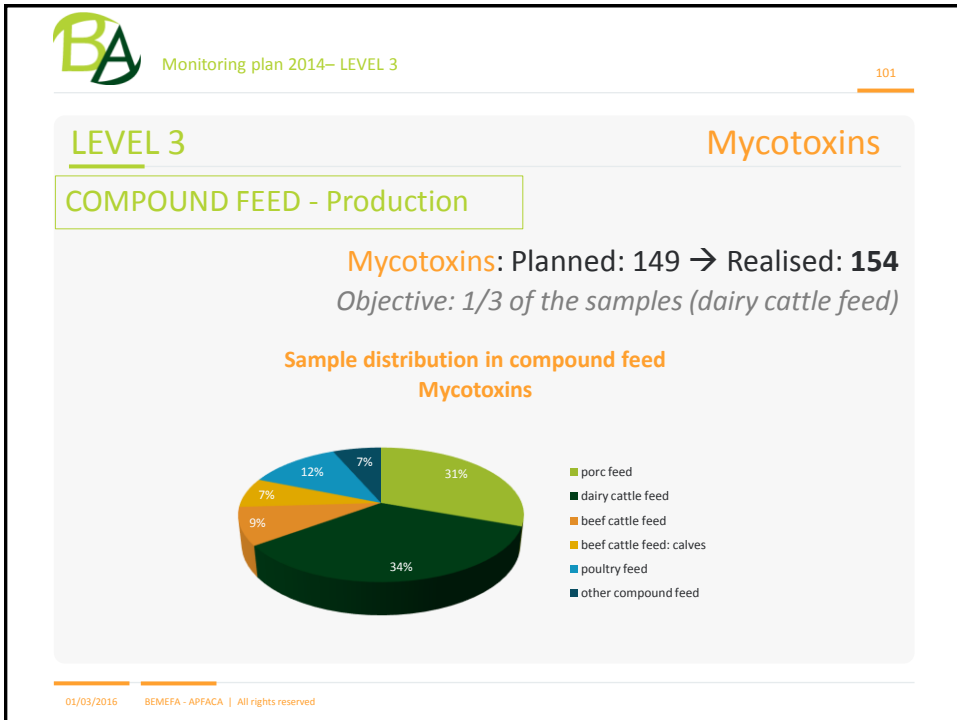
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**LEVEL 3** OVERVIEW

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

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**LEVEL 3** Mycotoxins

- **DON (deoxynivalenol)**
  - ⚖ Recommendation 2006/576 → guidance values
  - Complementary and complete feedingstuffs: 5.000 ppb
  - except porc: 900 ppb
  - except calf, lamb, baby goat : 2.000 ppb

**DON (deoxynivalenol)**

Category	Count
< 225 ppb	59
225 - 900 ppb	86
> 900 ppb	9

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**LEVEL 3** Mycotoxins

- **OTA (ochratoxin A)**
  - ⚖ Recommendation 2006/576 → guidance values
  - complementary feed and complete feedingstuffs :
  - porc: 50 ppb
  - poultry: 100 ppb

✓ 154 results → all < 12,5 ppb

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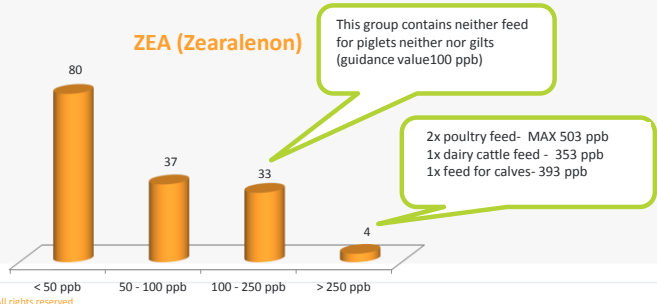


LEVEL 3

Mycotoxins

• ZEA (zearalenon)

⚖ Recommendation 2006/576 → guidance values  
 complementary feed and complete feedingstuffs :  
 piglet, gilts: 100 ppb  
 sow, fattening pigs: 250 ppb  
 calf, dairy cattle, sheep, goat: 500 ppb

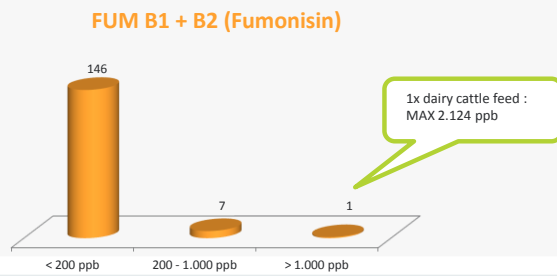


LEVEL 3

Mycotoxins

• FUM B1 + FUM B2 (Fumonisin)

⚖ Recommendation 2006/576 → guidance values  
 complementary feed and complete feedingstuffs :  
 porc, horse: 5.000 ppb  
 poultry,calve, lamb, baby goat: 20.000 ppb  
 adult ruminant: 50.000 ppb



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**LEVEL 3**

- **T2, HT2**

**Action limits FASFC: FEED T2/HT2**

- Compound feed poultry: 400 ppb
- Compound feed fattening pig: 500 ppb
- Compound feed piglet: 200 ppb
- Compound feed calve: 200 ppb

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

- Compound feed: 250 ppb

**Mycotoxins**

**T2**

150  
4

2x poultry feed: 20,4 ppb  
1x beef cattle feed 79 ppb  
1x porc feed: 100 ppb

**HT2**

152  
2

1x porc feed : 77 ppb  
1x dairy cattle feed: 191 ppb

< 20 ppb      > 20 ppb      < 75 ppb      > 75 ppb

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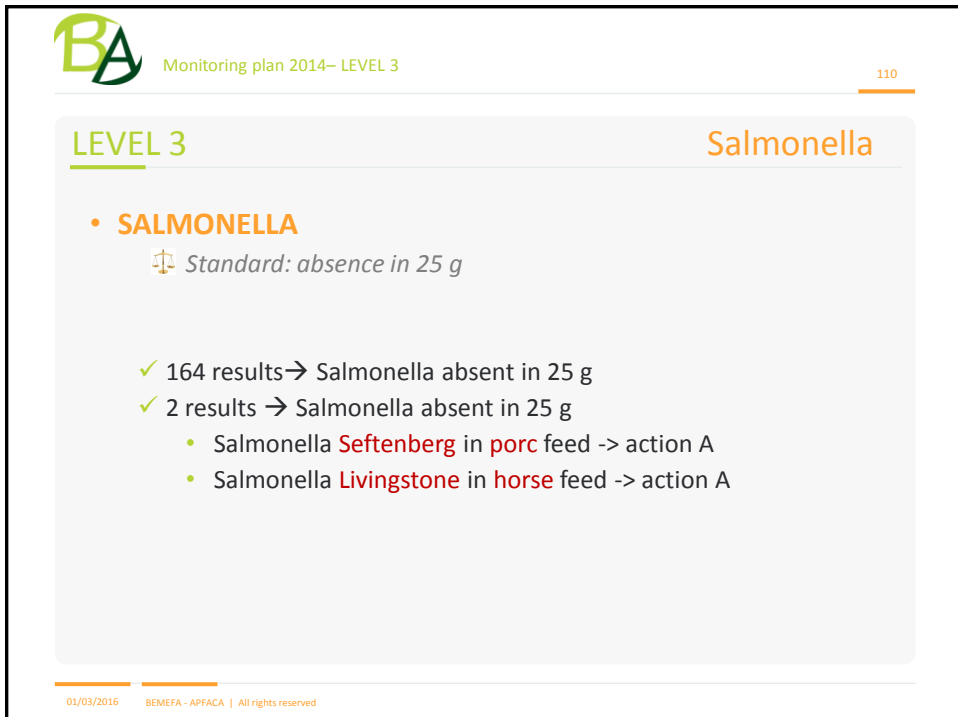
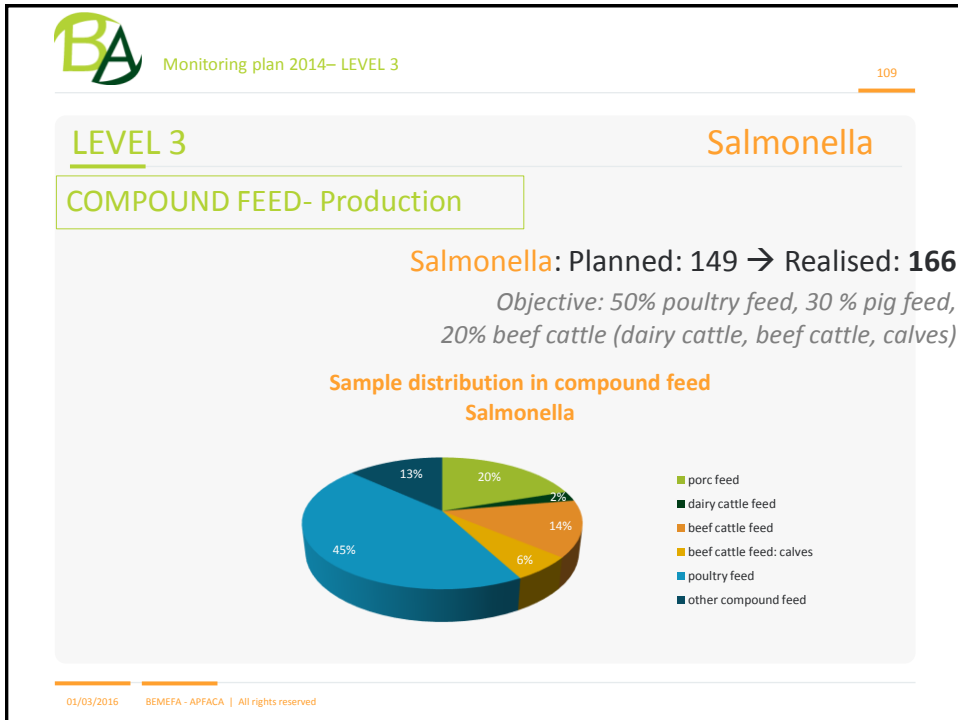
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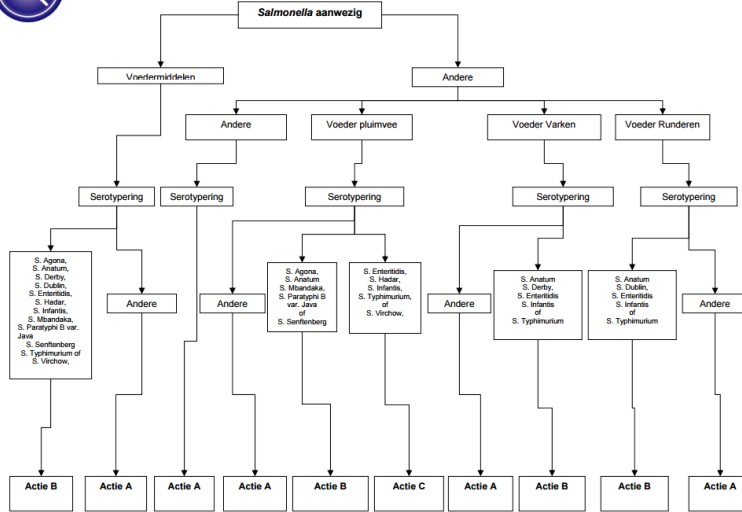
**LEVEL 3**

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

**OVERVIEW**

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Actie	Bij landbouwer	Bij mengvoederfabrikant	Bij handelsafabrikant grondstoffen
A	Voedermiddelen & mengvoeders: - Onderzoek bij de landbouwer - Onderzoek leverancierfabrikant - Waarschuwing <sup>2</sup>	Voedermiddelen & mengvoeders: - Onderzoek bron + maatregelen - Onderzoek bij leverancierfabrikant - Waarschuwing <sup>2</sup>	Voedermiddelen & mengvoeders: - Onderzoek bron + maatregelen - Onderzoek bij leverancierfabrikant - Waarschuwing <sup>2</sup>
B	Voedermiddelen & mengvoeders: - Onderzoek bij de landbouwer - Afhankelijk van het onderzoek, maatregelen ter voorkoming van hercontaminatie op het bedrijf (reiniging, ontsmetting) - Informatie PRI - Onderzoek bij leverancierfabrikant - Waarschuwing <sup>2</sup>	Voedermiddelen (1) - Beslagname voedermiddel aanwezig op bedrijf - Behandeling ( van het VM zelf of via gebruik in mengvoeders (bvb pelletiseren) + bewijs afwezigheid - Informatie afnemers + controle hierop - Beslagname aangemaakte voeders bij fabrikant + bemonstering (n=6) & analyse ⇒ Voor NC B voeders: zie (2) ⇒ Voor NC C voeders: zie (3) & (4) - Onderzoek bron + maatregelen - Onderzoek bij leverancierfabrikant - RASFF indien noodzakelijk - Waarschuwing <sup>2</sup> Mengvoeders (2) - Beslagname mengvoeders nog aanwezig op het bedrijf - Behandeling + bewijs afwezigheid - Informatie afnemers + controle hierop - Onderzoek bron + maatregelen - RASFF indien noodzakelijk - Waarschuwing <sup>2</sup>	Voedermiddelen & mengvoeders: - Beslagname - Behandeling + bewijs afwezigheid - Informatie afnemers + controle hierop - Onderzoek bij afnemers (zie (1)) - Onderzoek bron + maatregelen - Onderzoek bij leverancierfabrikant - RASFF indien noodzakelijk - Waarschuwing <sup>2</sup>
C	Mengvoeders (4) - 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 leverancierfabrikant - Waarschuwing <sup>2</sup>	Mengvoeders (3) - Beslagname + recall - Behandeling + bewijs afwezigheid - Informatie afnemers + controle hierop - Informatie PRI - Onderzoek bron + maatregelen - RASFF indien noodzakelijk - Waarschuwing <sup>2</sup>	

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



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**LEVEL 3** OVERVIEW

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

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**LEVEL 3** Heavy metals

**MINERAL FEED - Production**

4 heavy metals: Planned: 145 → Realised: **144**

- **ARSENIC**  
⚖ *Directive 2002/32 standard mineral feed: 12 ppm*

**ARSENIC**

Category	Count
< 0,5 ppm	41
0,5 - 5 ppm	101
> 5 ppm	2

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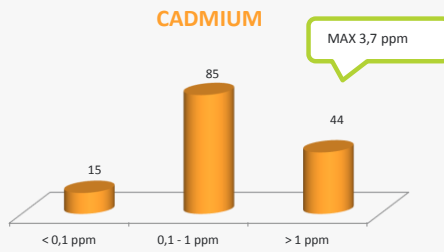
LEVEL 3

Heavy metals

MINERAL FEED - Production

• CADMIUM

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

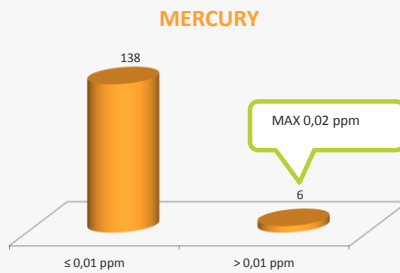


LEVEL 3

Heavy metals

• MERCURY

⚖ Directive 2002/32 Standard mineral feed: 0,2 ppm



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**LEVEL 3**
**Heavy metals**

- **LEAD**
  - ⚖ Directive 2002/32 Standard mineral feed: 15 ppm  
Except «long-term supply particular nutritional purposes »: 60 ppm

Category	Count
< 0,5 ppm	14
0,5 - 10 ppm	128
> 10 ppm	2

1) French operator  
 ✓ Analysis method BE – microwave destruction- 65% nitric acid → 48 ppm  
 ✓ Analysis method FR - milder destruction - 5% nitric acid → 8,6 ppm

2) “Long term supply particular nutritional purposes ”: **88 ppm** (70 ppm after deduction measurement error) (standard 60 ppm)

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**Monitoring plan 2014 – Results** [www.bemefa.be](http://www.bemefa.be)

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

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Thank you for your attention!

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