GMP+ International

TS 1.5 Specific feed safety limits

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GMP+ Feed Certification scheme 2020

Feed Safety Worldwide

gmpplus.org

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Welcome

This Feed Certification Scheme document helps you to provide feed safety worldwide. By meeting the requirements set by GMP+ International together with our GMP+ Community, we aim to help you get the feed certification you need. Please read the information in this document carefully.

Let's make this work together!

1. Introduction

There are references in the various GMP+ documents to the specific feed safety limits.

The specific feed safety limits included in this document are:
a. the specific feed safety limits as laid down in the European Union feed legislation, or
b. a number of product standards, as determined within the framework of the GMP+ Feed Certification scheme 2020 in consultation with the subsequent links in the animal production chain.

DISCLAIMER: The GMP+ International has adopted this list in order to inform interested parties with respect to the standards in the legislation (European Union and additional GMP+ standards). The list will be regularly updated. The GMP+ International is not liable for any errors in this list.

2. General conditions

In arriving at the product standards a distinction has been made between action and rejection limits. The action limits for undesirable contaminants is appreciably lower than the rejection limit.

Action limit:
A feasible limit agreed in consultation with the sector, supplier or customer. Where the **action limit** is exceeded an investigation must be carried out into the source of the contamination and measures must be taken to remove or limit the source of the contamination.

Rejection limit:
A feasible limit agreed in consultation with the sector, supplier or customer. If the **rejection limit** is exceeded then the product is not suitable for use as a feed material or animal feed.

In the various GMP+ standards it is stated that the participant must ensure that deviations (in the product or process) from the requirements in this standard are recorded and controlled in order to prevent unintentional use or delivery of the product.

Product standards for mixes of feed materials (semi-manufactured product) which are marketed as such
The product standards for the maximum level of undesirable substances is calculated proportionately from the product standard for the individual components. This calculation principle is also applied for the calculation of the product standard for pesticides for compound feeds (see section 4.2.4 question no.5).

3. Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Microbiological: Other undesirable substances and products						
M1	Antibacterial inhibition	- Feed materials - Wet mixes	-	< 15 mm	GMP+	According to the 5-plate test MB003, derived from EG-4-plate test, product basis (RIVM report no. 206; Archiv fur Lebensmittel-hygiene 31 (1981) page 97-140.

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[(1)]	Rejection limit[(1)]	Source	Supplementary requirements
Microbiological						
M3	Enterobacteriaceae	Animal by-products that are placed on the market as feed materials*		300 CFU/g	Commission Regulation (EU) 142/2011, annex X, chapter 1	n = 5, c = 2, m = 10, M = 300 in 1 g [14] These standards apply to: samples of the final products taken during or on withdrawal from storage at the processing plant. * this microbiological standard shall not apply to rendered fats and fish oil from the processing of animal by-products, when the processed animal protein, which is obtained during the same processing, is subject to sampling to ensure compliance with those standards. Further, for imports from outside the European Union (EU) specific requirements may apply. See Regulation (EU) 142/2011 for more information.
		Processed petfood * - Dogchews and processed petfood, with the exception of canned petfood - Canned petfood		 300 CFU/g Canned petfood which has been subjected to heat treatment with a Fc value of at least 3	Commission Regulation (EU) 142/2011, annex XIII, chapter 2	 n = 5, c = 2, m = 10, M = 300 in 1 g [14] Samples are taken during production and/or during storage (before dispatch)

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
		Raw petfood		5.000 CFU/g	Commission Regulation (EU) 142/2011, annex XIII, chapter 2	n = 5, c = 2, m = 10, M =5.000 in 1 g [14] Samples are taken during production and/or during storage (before dispatch) * Further, for imports from outside the European Union (EU) specific requirements may apply. See Regulation (EU) 142/2011 for more information.

[14] n = number of samples to be tested; m = threshold value for the number of bacteria; the result shall be considered satisfactory if the number of bacteria in all samples does not exceed m; M = maximum value for the number of bacteria; the result shall be considered unsatisfactory if the number of bacteria in one or more samples is M or more; and c = number of samples the bacterial count of which may be between m and M, the sample shall still be considered acceptable if the bacterial count of the other samples is m or less.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Microbiological: Microbiological contamination						
M4a	Salmonella	Consumption chick feed: end products and feed materials for: - Top breeding consumption chicks - Breeding increase consumption chicks - Increase consumption chicks - Consumption chicks	 - - - -	 0⁺% [20](approaching 0%) 0⁺% [20](approaching 0%) 0⁺% [20](approaching 0%) 0⁺% [20](approaching 0%)	GMP+	
		Laying poultry feed: end products and feed materials for: - Top breeding laying poultry - Raising increase laying poultry - Increase laying poultry - Laying-hens and breeding hens	 - - - 1%	 0⁺% [20](approaching 0%) 0⁺% [20](approaching 0%) 0⁺% [20](approaching 0%) 0⁺% [20](approaching 0%) for S. enteritidus and S. typhimurium	GMP+	
		Turkey feed: end products and feed materials for: - Raising increase turkeys - Increase turkeys - Consumption turkeys	 - - -	 0⁺% [20](approaching 0%) 0⁺% [20](approaching 0%) 0⁺% [20](approaching 0%)	GMP+	
		Other animal feeds, feed materials and wet mixes intended for cattle farms (except for poultry feeds).	-	Absent in 25 gr	GMP+	

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Microbiological: Microbiological contamination						
		From animal by-products derived products with the exception of canned petfood	-	Absent in 25 gr	Commission Regulation (EU) 142/2011, annex XIII, chapter 2	n = 5, c = 0, m = 0, M = 0 [14]
		From animal by-products derived canned petfood		-	Commission Regulation (EU) 142/2011, annex XIII, chapter 2	Canned petfood which has been subjected to heat treatment with a Fc value of at least 3
M4b	Salmonella preservation determined through pH	Feed materials for delivery to cattle farms, and Wet mixes for delivery to livestock farmers on the basis of: - Spontaneous lactic acid fermentation - Add organic acids - Add inorganic acids	 - 	Maximum pH for guarantee: 4.5 4 3,5	GMP+	If preservation can be achieved at a higher pH then this should be supported with data. These norms do not apply if the products are supplied at a temperature of at least 60°C and the supplier is demonstrably informed of the storage conditions. The absence of Salmonella can also be shown in heat-treated wet mixes and feed materials (<13% moisture) through compliance with the norms for Enterobacteriaceae.

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

[20] Explanation of 0^+: this norm does not apply to each individual sample. In a particular period of time the Salmonella incidence at company level should approach 0% (= 0^+).

[14] n = number of samples to be tested; m = threshold value for the number of bacteria; the results will be considered to be satisfactory if the number of bacteria in none of the samples is greater than m, M = maximum value for the number of bacteria; the result shall be considered unsatisfactory if the number of bacteria in one or more samples is M or more; c = number of samples for which the bacteria count gives a result between m and M and where the sample is still considered acceptable if the result of the bacteria for the other samples is not higher than m.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Microbiological: Microbiological contamination						
M5a	Moulds	Feed materials	10^6 CFU/g			In the TNO report "*Norm for fungal load in animal feed (D4.16)*" you can read the foundation of the new standards and the suggestions for analysis methods.
M5b	Yeast	Feed materials≤ 12% moisture content or aw-value ≤ 0.95	10^6 CFU/g			
		Feed materials ≥ 12% moisture content or aw-value ≥ 0.95	-			

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Mycotoxin						
C1	Aflatoxin B1	Feed materials intended for (direct) delivery to dairy farmers	-	0.005 mg/kg	GMP+	
		Feed materials	-	0.02 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	
		Complementary and complete feed with the exception of:	-	0.01 mg/kg		
		- compound feed for dairy cattle and calves, dairy sheep and lambs, dairy goats and kids, piglets and young poultry animals.	-	0.005 mg/kg		
		- compound feed for cattle (except dairy cattle and calves), sheep (except dairy sheep and lambs), goats (except dairy goats and kids), pigs (except piglets) and poultry (except young animals).	-	0,02 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C2	Aldrin Dieldrin (Singly or combined expressed as dieldrin)	Feed materials and compound feed, with the exception of: - fats and oils, - compound feed for fish	-	0.01 mg/kg 0,1 mg/kg 0.2 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	Maximum level for aldrin and dieldrin, singly or combined, expressed as dieldrin.

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[(1)]	Rejection limit[(1)]	Source	Supplementary requirements
Chemical: Heavy metals						
C3	Arsenic[16]	Feed materials, with the exception of:	-	2 mg/kg	Commission Regulation (EU) No 2019/1869 amending Annex I to Directive 2002/32/EC	
		- meal made from grass, from dried lucerne and from dried clover, and dried sugar beet pulp and dried molasses sugar beet pulp,	-	4 mg/kg		
		– palm kernel expeller;	-	4 mg/kg[15]		
		– peat; leonardite;	-	5 mg/kg [15]		
		– phosphates and calcareous marine algae;	-	10 mg/kg		
		- calcium carbonate; calcium and magnesium carbonate [11]; calcareous marine shells;	-	15 mg/kg		
		– magnesium oxide and magnesium carbonate	-	20 mg/kg		
		– fish, other aquatic animals and products derived thereof,	-	25 mg/kg[15]		
		– seaweed meal and feed materials derived from seaweed	-	40 mg/kg[15]		
		Iron particles used as tracer	-	50 mg/kg		
		Feed additives belonging to the functional group of compounds of trace elements except:	-	30 mg/kg		
		– cupric sulphate pentahydrate; cupric carbonate; dicopper; chloride trihydroxide; ferrous carbonate; dimanganese chloride trihydroxide;	-	50 mg/kg		

	Contaminant	Product	Action limit[(1)]	Rejection limit[(1)]	Source	Supplementary requirements
		– zinc oxide, manganous oxide and cupric oxide	-	100 mg/kg		
		Complete feed, with the exception of: - complete feed for fish and fur animals. - complete feed for pet animals containing fish, other aquatic animals and products derived thereof and/or seaweed meal and feed materials derived from seaweed.	- - -	2 mg/kg 10 mg/kg[15] 10 mg/kg[15]		
		Complementary feed, with the exception of: - mineral feed	- -	4 mg/kg 12 mg/kg		
		- complementary feed for pet animals containing fish, other aquatic animals and products derived thereof and/or seaweed meal and feed materials derived from seaweed. - long-term supply formulations of feed for particular nutritional purposes with a concentration of trace elements higher than 100 times the established maximum content in complete feed.		10 mg/kg [15] 30 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
[15] At the request of the competent authorities the responsible operator must carry out an analysis to show that the level of inorganic arsenic is lower than 2 ppm. This analysis is especially important for the Hizikia fusiforme seaweed
[16] The maximum levels refer to the total level of arsenic.
[11] Calcium and magnesium carbonate refers to the natural mixture of calcium carbonate and magnesium carbonate as described in the European Catalogue of feed materials.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Other undesirable substances and products						
C4	Hydrocyanic acid	Feed materials, with the exception of: - linseed - linseed cakes - manioc products and almond cake.	- - - -	50 mg/kg 250 mg/kg 350 mg/kg 100 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	
		Complete feed, with the exception of: - complete feed for young chickens (< 6 weeks)	- -	50 mg/kg 10 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Heavy metals						
C6	Cadmium	Feed materials of vegetable origin	-	1 mg/kg	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	
		Feed materials of animal origin	-	2 mg/kg		
		Feed materials of mineral origin, with the exception of:		2 mg/kg		
		- phosphates	-	10 mg/kg		
		Feed additives, belonging to the functional group "Compounds of trace elements", with the exception of:	-	10 mg/kg		
		- cupric oxide, manganous oxide, zinc oxide and manganous sulphate-monohydrate	-	30 mg/kg		
		Feed additives belonging to the functional groups of binders and anti-caking agents	-	2 mg/kg		
		Premixtures	-	15 mg/kg[2]		
		Complementary feed with the exception of:	-	0,5 mg/kg		
		Mineral feed				
		- containing < 7% phosphorus [8]	-	5 mg/kg		
		- containing≥ 7% phosphorus [8]	-	0,75 mg/kg per 1% phosphorus [8], with a maximum of 7,5 mg/kg		
		Complementary feed for pet animals	-	2 mg/kg		
		Long-term supply formulations of feed for particular nutritional purposes with a concentration of trace elements higher than 100	-	15 mg/kg		

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
		times the established maximum content in complete feed.				
		Complete feed with the exception of: - complete feed for cattle (except calves), sheep (except lambs) goats (except kids) and fish	-	0,5 mg/kg 1 mg/kg		
		- complete feed for pet animals	-	2 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
[2]The maximum level established for premixtures takes into account the additives with the highest level of lead and cadmium and not the sensitivity of the different animal species to lead and cadmium. As provided in Article 16 of Regulation (EC) No 1831/2003 of the European Parliament and of the Council of 22 September 2003 on additives for use in animal nutrition (OJ L 268, 18.10.2003, p. 29), in order to protect animal and public health, it is the responsibility of the producer of premixtures to ensure that, in addition to compliance with the maximum levels for premixtures, the instructions for use on the premixture are in accordance with the maximum levels for complementary and complete feed.
[8] The % of phosphorus is relative to a feed with a moisture content of 12 %.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Salts						
C7	Chloride	- Feed materials for delivery to livestock farms, and - Wet mixes for delivery to livestock farmers	10 g/kg (dry matter)		GMP+	If the action limit is exceeded then a warning or processing advice must be ***demonstrably communicated*** to the customer. Supply of additional water to the animals is also important to avoid health problems. More recommendations in the event of excess of the action limit can be found in GMP+ D4.13 *Salts in rations with wet feeds for fattening pigs and sows*

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C8	Camphechlor (toxaphene) – sum of the indicators CHB 26, 50 and 62[22]	Fish, other aquatic animals and products thereof with the exception of fish oil - fish oi Complete feed for fish	- - -	0.02 mg/kg 0.2 mg/kg 0.05 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

[22] Numbering system according to Parlar, prefixed by either CHB or "Parlar":
- CHB 26: 2-endo,3-exo,5-endo,6-exo,8,8,10,10-octochlorobornane,
- CHB 50: 2-endo,3-exo,5-endo,6-exo,8,8,9,10,10-nonachlorobornane,
- CHB 62: 2,2,5,5,8,9,9,10,10-nonachlorobornane.

* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C9	Chlordane (sum of cis- en transisomers and of oxychlordane expressed chlordane)	Feed materials and compound feed with the exception of: - fats and oils	- -	0.02 mg/kg 0.05 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Fysical: Harmful Botanical impurities						
C10	Crotalaria spp.	Feed materials and compound feed	-	100 mg/kg	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C11	DDT (sum of DDT-, DDD- (or TDE-) and DDE-isomers, expressed as DDT)	Feed materials and compound feed with the exception of: - fats and oils	- -	0.05 mg/kg 0.5 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Other undesirable substances and products						
C12	Prohibited Animal proteins (Restricted animal proteins)	Animal feeds for productive livestock	-	0	Regulation 999/2001, art. 7 and Appendix IV	See TS 1.4 *Forbidden Products and Fuels*

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1] [4]	Rejection limit[1][4]	Source	Supplementary requirements
Chemical: Toxic substances						
C13a	Dioxin [18] (sum of polychlorinated dibenzo-para-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) expressed in World Health Organisation (WHO) toxic equivalents, using the WHO-TEFs (toxic equivalency factors, 2005))	Feed materials of plant origin with the exception of vegetable oils and their by-products	0,5 ng WHO-PCDD/F-TEQ/kg	0,75 ng WHO-PCDD/F-TEQ/kg	Commission Regulation (EU) No 2019/1869 amending Annex I to Directive 2002/32/EC	In the event of exceeding the action limit: Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
		Vegetable oils and their by-products	0,5 ng WHO-PCDD/F-TEQ/kg	0,75 ng WHO-PCDD/F-TEQ/kg		
		Feed materials of mineral origin	0,5 ng WHO-PCDD/F-TEQ/kg	0,75 ng WHO-PCDD/F-TEQ/kg		
		Feed materials of animal origin:				
		Animal fat including milk fat and egg fat	0,75 ng WHO-PCDD/F-TEQ/kg	1,50 ng WHO-PCDD/F-TEQ/kg		
		Other land animal products including milk and milk products and eggs and egg products.	0,5 ng WHO-PCDD/F-TEQ/kg	0,75 ng WHO-PCDD/F-TEQ/kg		
		Fish oil	4,0 ng WHO-PCDD/F-TEQ/kg	5,0 ng WHO-PCDD/F-TEQ/kg		In the event of exceeding the action limit: In many cases it might not be necessary to perform an investigation into the source of

	Contaminant	Product	Action limit[(1)] [(4)]	Rejection limit[(1)(4)]	Source	Supplementary requirements
		Fish, other aquatic animals and products derived thereof, with the exception of fish oil and hydrolysed fish protein containing more than 20% fat[6] and crustacean meal.	0,75 ng WHO-PCDD/F-TEQ/kg	1,25 ng WHO-PCDD/F-TEQ/kg		contamination as the background level in some areas is close or above the action level. However, in cases where the action level is exceeded, all information, such as sampling period, geographical origin, fish species, etc., shall be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in the materials for animal nutrition.
		Hydrolysed fish protein containing more than 20% fat; crustacean meal.	1,25 ng WHO-PCDD/F-TEQ/kg	1,75 ng WHO-PCDD/F-TEQ/kg		
		Feed additives belonging to the functional groups of binders and anti-caking agents (*)	0,5 ng WHO-PCDD/F-TEQ/kg	0,75 ng WHO-PCDD/F-TEQ/kg		In the event of exceeding the action limit: Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination. (*) The maximum level is also applicable to the feed additives belonging to the functional groups of substances for the control of radionuclide contamination and substances for reduction of the contamination of feed by mycotoxins which are also belonging to the functional groups of binders and anti-caking agents.'
		Feed additives belonging to the functional group of compounds of trace elements.	0,5 ng WHO-PCDD/F-TEQ/kg	1,0 ng WHO-PCDD/F-TEQ/kg		
		Premixes	0,5 ng WHO-PCDD/F-TEQ/kg	1,0 ng WHO-PCDD/F-TEQ/kg		
		Compound feeds with the exception of:	0,5 ng WHO-PCDD/F-TEQ/kg	0,75 ng WHO-PCDD/F-TEQ/kg		
		- compound feed for pet animals and fish	1,25 ng WHO-PCDD/F-TEQ/kg	1,75 ng WHO-PCDD/F-TEQ/kg		In the event of exceeding the action limit: In many cases it might not be necessary to perform an investigation into the source of contamination as the background level in some areas is close or above the action level. However, in cases where the action level is exceeded, all information, such as sampling period, geographical origin, fish species, etc., shall be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in the materials for animal nutrition.
		- compound feed for fur animals	-	-		

	Contaminant	Product	Action limit[1] [4]	Rejection limit[1][4]	Source	Supplementary requirements
C13b	Sum of dioxins and dioxin-like PCBs[18] (sum of polychlorinated dibenzo- para-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs) and polychlorinated biphenyls (PCBs) expressed in World Health Organisation (WHO) toxic equivalents, using the WHO-TEFs (toxic equivalency factors, 2005))	Feed materials of plant origin with the exception of vegetable oils and their by-products		1.25 ng WHO-PCDD/F-PCB-TEQ/kg		(*) the maximum level is also applicable to the feed additives belonging to the functional groups of substances for the control of radionuclide contamination and substances for reduction of the contamination of feed by mycotoxins which are also belonging to the functional groups of binders and anti-caking agents.'
		Vegetable oils and their by-products		1.5 ng WHO-PCDD/F-PCB-TEQ/kg		
		Feed materials of mineral origin		1,0 ng WHO-PCDD/F-PCB-TEQ/kg		
		Feed materials of animal origin:				
		- Animal fat including milk fat and egg fat		2,0 ng WHO-PCDD/F-PCB-TEQ/kg		
		- Other land animal products including milk and milk products and eggs and egg products		1.25 ng WHO-PCDD/F-PCB-TEQ/kg		
		- Fish oil		20,0 ng WHO-PCDD/F-PCB-TEQ/kg		
		- Fish, other aquatic animals and products derived thereof with the exception of fish oil and fish protein hydrolysates containing more than 20% fat[6]		4,0 ng WHO-PCDD/F-PCB-TEQ/kg		
		- Fish protein hydrolysates containing more than 20% fat		9,0 ng WHO-PCDD/F-PCB-TEQ/kg		
		The feed additives belonging to the functional groups of binders and anti-caking agents (*)		1.5 ng WHO-PCDD/F-PCB-TEQ/kg		

	Contaminant	Product	Action limit[(1)(4)]	Rejection limit[(1)(4)]	Source	Supplementary requirements
		Feed additives belonging to the functional group of compound of trace elements.		1.5 ng WHO-PCDD/F-PCB-TEQ/kg		
		Premixtures		1.5 ng WHO-PCDD/F-PCB-TEQ/kg		
		Compound feed with the exception of:		1.5 ng WHO-PCDD/F-PCB-TEQ/kg		
		- Compound feed for pet animals and fish		5,0 ng WHO-PCDD/F-PCB-TEQ/kg		
		- Compound feed for fur animals		-		
C13c	Dioxin-like PCBs[18] (sum of polychlorinated biphenyls (PCBs) expressed in World Health Organisation (WHO) toxic equivalents, using the WHO- TEFs (toxic equivalency factors, 2005)	Feed materials of plant origin with the exception of vegetable oils and their by-products	0.35 ng WHO-PCB-TEQ/kg			In the event of exceeding the action limit: Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
		Vegetable oils and their by-products	0.5 ng WHO-PCB-TEQ/kg			
		Feed materials of mineral origin	0.35 ng WHO-PCB-TEQ/kg			
		Feed materials of animal origin:				
		- Animal fat including milk fat and egg fat	0.75 ng WHO-PCB-TEQ/kg			
		- Other land animal products including milk and milk products and eggs and egg products	0.35 ng WHO-PCB-TEQ/kg			

	Contaminant	Product	Action limit[(1)] [(4)]	Rejection limit[(1)(4)]	Source	Supplementary requirements
		- Fish oil	11,0 ng WHO-PCB-TEQ/kg			In the event of exceeding the action limit: In many cases it might not be necessary to perform an investigation into the source of contamination as the background level in some areas is close or above the action level. However, in cases where the action level is exceeded, all information, such as sampling period, geographical origin, fish species, etc., shall be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in the materials for animal nutrition.
		- Fish, other aquatic animals and products derived thereof with the exception of fish oil and fish protein, hydrolysed, containing more than 20% fat [6]	2,0 ng WHO-PCB-TEQ/kg			
		- Fish protein, hydrolysed, containing more than 20% fat	5,0 ng WHO-PCB-TEQ/kg			
		Feed additives belonging to the functional groups of binders and anti-caking	0.5 ng WHO-PCB-TEQ/kg			In the event of exceeding the action limit: Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
		Feed additives belonging to the functional group of compounds of trace elements	0.35 ng WHO-PCB-TEQ/kg			
		Premixtures	0.35 ng WHO-PCB-TEQ/kg			
		Compound feed with the exception of:	0.5 ng WHO-PCB-TEQ/kg			
		- Compound feed for pet animals and fish,	2,5 ng WHO-PCB-TEQ/kg			In the event of exceeding the action limit: In many cases it might not be necessary to perform an investigation into the source of contamination as the background level in some areas is close or above the action level. However, in cases where the action level is exceeded, all information, such as sampling period, geographical origin, fish species, etc., shall be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in the materials for animal nutrition.
		- Compound feed for fur animals	-			

	Contaminant	Product	Action limit[1] [4]	Rejection limit[1][4]	Source	Supplementary requirements
C13d	Non-dioxin-like PCBs (sum of PCB 28, PCB 52, PCB 101, PCB 138, PCB 153 and PCB 180 (ICES – 6))	Feed materials of plant origin		10 µg/kg (ppb)		(*) the maximum level is also applicable to the feed additives belonging to the functional groups of substances for the control of radionuclide contamination and substances for reduction of the contamination of feed by mycotoxins which are also belonging to the functional groups of binders and anti-caking agents.'
		Feed materials of mineral origin		10 µg/kg (ppb)		
		Feed materials of animal origin:		10 µg/kg (ppb)		
		- Animal fat, including milk fat and egg fat		10 µg/kg (ppb)		
		- Other land animal products including milk and milk products and eggs and egg products		10 µg/kg (ppb)		
		- Fish oil		175 µg/kg (ppb)		
		- Fish, other aquatic animals and products derived thereof with the exception of fish oil and fish protein, hydrolysed, containing more than 20 % fat [5]		30 µg/kg (ppb)		
		- Fish protein, hydrolysed, containing more than 20 % fat		50 µg/kg (ppb)		
		The feed additives belonging to the functional groups of binders and anti-caking agents		10 µg/kg (ppb)		
		Feed additives belonging to the functional group of compounds of trace elements		10 µg/kg (ppb)		
		Premixture		10 µg/kg (ppb)		
		Compound feed with the exception of:		10 µg/kg (ppb)		
		- compound feed for pet animals and fish		40 µg/kg (ppb)		
		- compound feed for fur animals		-		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
[4] Upper-bound concentrations; upper-bound concentrations are calculated on the assumption that all values of the different congeners below the limit of quantification are equal to the limit of quantification.
[5] Fresh fish and other aquatic animals directly delivered and used without intermediate processing for the production of feed for fur animals are not subject to the maximum levels, while maximum levels of 75 µg/kg product are applicable to fresh fish and 200 µg/kg product are applicable to fish liver used for the direct feeding of pet animals, zoo and circus animals or used as feed material for the production of pet food. The products or processed animal proteins produced from these animals (fur animals, pet animals, zoo and circus animals) cannot enter the food chain and cannot be fed to farmed animals which are kept, fattened or bred for the production of food.
[6] Fresh fish and other aquatic animals directly delivered and used without intermediate processing for the production of feed for fur animals are not subject to the maximum levels, while maximum levels of 3,5 ng WHO-PCDD/F-TEQ/kg product and 6,5 ng WHO-PCDD/F-PCB-TEQ/kg product are applicable to fresh fish and 20,0 ng WHO-PCDD/F-PCB-TEQ/kg product is applicable to fish liver used for the direct feeding of pet animals, zoo and circus animals or used as feed material for the production of pet food. The products or processed animal proteins produced from these animals (fur animals, pet animals, zoo and circus animals) cannot enter the food chain and cannot be fed to farmed animals which are kept, fattened or bred for the production of food.
[18] Table of TEF (= toxic equivalency factors) for dioxins, furans and dioxin-like PCBs: WHO-TEFs for human risk assessment based on the conclusions of the World Health Organisation (WHO) – International Programme on Chemical Safety (IPCS) expert meeting which was held in Geneva in June 2005 (Martin van den Berg et al., The 2005 World Health Organisation Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin- like Compounds. Toxicological Sciences 93(2), 223–241 (2006))

Congener	TEF value	Congener	TEF value	
Dibenzo-p-dioxins (PCDDs)		***Dioxin-like PCBs:***		
2,3,7,8-TCDD	1			
1,2,3,7,8-PeCDD	1	***Non-ortho-PCBs***		
1,2,3,4,7,8-HxCDD	0.1	PCB 77	0,0001	
1,2,3,6,7,8-HxCDD	0.1	PCB 81	0,0003	
1,2,3,7,8, 9-HxCDD	0.1	PCB 126	0,1	
1,2,3,4,6,7,8-HpCDD	0.01	PCB 169	0,03	
OCDD	0,0003			
		Mono-ortho-PCBs		
Dibenzofuranes (PCDFs)		PCB 105	0,00003	
2,3,7,8-TCDF	0.1	PCB 114	0,00003	
1,2,3,7,8-PeCDF	0,03	PCB 118	0,00003	
2,3,4,7,8-PeCDF	0,3	PCB 123	0,00003	
1,2,3,4,7,8-HxCDF	0.1	PCB 156	0,00003	
1,2,3,6,7,8-HxCDF	0.1	PCB 157	0,00003	
1,2,3,7,8,9-HxCDF	0.1	PCB 167	0,00003	
2,3,4,6,7,8-HxCDF	0.1	PCB 189	0,00003	
1,2,3,4,6,7,8-HpCDF	0.01			
1,2,3,4,7,8,9-HpCDF	0.01			
OCDF	0,0003			
Abbreviations used: T= tetra; Pe= penta; Hx=hexa; Hp= hepta; O= octa; CDD= chlorodibenzodioxin; CDF= chlorodibenzofuran; CB= chlorobiphenyl				

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Mycotoxin						
C15	DON (Deoxynivalenol)	Compound feed (on full ration basis) for: - Pigs - Cattle - Calves up to 4 months - Dairy cattle - Poultry	 0.8 mg/kg 4 mg/kg 1.6 mg/kg 2.4 mg/kg 3.2 mg/kg	 1 mg/kg 5 mg/kg 2 mg/kg 3 mg/kg 4 mg/kg	GMP+	- The European Commission has published "Recommendation 2006/576/EC" regarding the guidance values for this mycotoxin. GMP+ International has established other values to comply.
		Compound feed for lambs, kids and dogs Other compound feeds	2 mg/kg 5 mg/kg		Commission Recommendation 2006/576/EC	
		Feed material (supplied to the livestock farmer for immediate feeding) for ([21]) - Pigs - Cattle - Calves up to 4 months - Dairy cattle - Poultry	 1 mg/kg 5 mg/kg 2 mg/kg 3 mg/kg 4 mg/kg	 5 mg/kg 15 mg/kg 6 mg/kg 9 mg/kg 12 mg/kg	GMP+	

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
		Feed materials for other purposes - Cereals and cereal products ([22]) with the exception of maize by-products - Maize by-products	 8 mg/kg 12 mg/kg		Commission Recommendation 2006/576/EC	The supplier provides information to the client in the event of infringement of the action limit for the level of the undesirable substance and provides advice on processing the product in the ration

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

[21] The supplier provides information to the livestock farmer in the event of infringement of the action limit for the level of the undesirable substance and provides advice on processing the product in the days ration

[22]The term 'Cereals and cereal products' includes not only the feed materials listed under heading 1 'Cereal grains and products derived thereof' of the list of feed materials referred to in part C of the European Catalogue of feed materials but also other feed materials derived from cereals in particular cereal forages and roughages.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C16	Endosulfan (sum of alfa and bèta-isomers and of endosulfan sulphate, expressed as endosulfan)	Feed materials and compound feed with the exception of:		0,1 mg/kg	Commission Regulation (EU) No 2015/186 amending Annex I to Directive 2002/32/EC	
		- cotton seed and products derived from the processing thereof, except crude cotton seed oil		0,3 mg/kg		
		- soybean and products derived from the processing thereof, except crude soybean oil		0,5 mg/kg		
		- crude vegetable oil,	-	1,0 mg/kg		
		- complete feed for fish except for *Salmonids*,	-	0,005 mg/kg		
		- complete feed for *Salmonids*	-	0,05 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C17	Endrin (sum of endrin and deltaketo-endrin, expressed as endrin)	Feed materials and compound feed with the exception of: - fats and oils	- -	0.01 mg/kg 0.05 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C17	Endrin (sum of endrin and deltaketo-endrin, expressed as endrin)	Feed materials and compound feed with the exception of: - fats and oils	- -	0.01 mg/kg 0.05 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C20	Heptachlor (sum of heptachlor and heptachlor epoxyd, expressed as heptachlor)	Feed materials and compound feed, with the exception of: - fats and oils	- -	0.01 mg/kg 0.2 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C21	Hexachlorobenzene (HCB)	Feed materials and compound feed, with the exception of: - fats and oils	- -	0.01 mg/kg 0.2 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C22a	Hexachlorocyclohexane (HCH):				Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	
	- Alfa-isomer	Feed materials and compound feed, with the exception of:	-	0.02 mg/kg		
		- fats and oils	-	0.2 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C22b	Hexachlorocyclohexane (HCH):		-		Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	
	- Beta-isomer	Compound feeds with the exception of:	-	0.01 mg/kg		
		- compound feed for dairy cattle	-	0.005 mg/kg		
		Feed materials, with the exception of:	-	0.01 mg/kg		
		- fats and oils	-	0.1 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Crop protection agents (Pesticides which are not permitted in the EU) *						
C22c	Hexachlorocyclohexane (HCH):		-		Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	
	- Gamma-isomer (lindane)	Feed materials and compound feed, with the exception of:	-	0.2 mg/kg		
		- fats and oils	-	2.0 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
* Pesticides which are not included in Directive 2002/32 / EEC, Annex I, Section IV should comply to Regulation (EC) no. 396/2005

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Salts						
C23	Potassium	- Feed materials for delivery to cattle farms, and - Wet mixes for delivery to cattle farmers	60 g/kg (dry matter)		GMP+	If the action limit is exceeded then a warning or processing advice must be ***demonstrably communicated*** to the customer. Supply of additional water to the animals is also important to avoid health problems. More recommendations in the event of excess of the action limit can be found in GMP+ D4.13 *Salts in rations with wet feeds for fattening pigs and sows*

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Toxic substances						
C24	Mineral oil hydrocarbons (C10-C40)	Animal fat, with the exception of: - crude fish oil	- -	400 mg/kg (on product basic) 3,000 mg/kg (on product basic)	GMP+	
		Vegetable oil and fat (with the exception of sunflower oil)	-	400 mg/kg (on product basic)		
		Sunflower oil	-	1,000 mg/kg (on product basic)		
		Vegetable fatty acids distillates/acid oils/fatty acids from splitting/stearin fraction and olein fraction (with the exception of Sunflower fatty acid distillates/acid oils/fatty acids from splitting)	-	3,000 mg/kg (on product basic)		
		Sunflower fatty acid distillates/acid oils/fatty acids from splitting	-	1,000 mg/kg (on product basic)		
		Palm oil	-	25 mg/kg calculated as diesel oil		This norm applies if the hydrocarbons (calculated as diesel oil) are determined via the GC-MS method. If use is made of the GC-FID method, then the norm for vegetable oil applies

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Heavy metals						
C26	Mercury [16]	Feed materials, with the exception of:	-	0.1 mg/kg	Commission Regulation (EU) 2019/1869 amending Annex I to Directive 2002/32/EC	
		- fish, other aquatic animals and products derived thereof intended for the production of compound feed for food producing animals;	-	0.5 mg/kg		
		- fish, other aquatic animals and products derived thereof, intended for the production of compound feed for dogs, cats, ornamental fish and fur animals;	-	1,0 mg/kg (*)		
		- fish, other aquatic animals and products derived thereof as canned wet feed material for direct feeding of dogs and cats	-	0,3 mg/kg		
		- calcium carbonate; calcium and magnesium carbonate [11]	-	0.3 mg/kg		
		Compound feed, with the exception of:	-	0.1 mg/kg		
		- mineral feed	-	0.2 mg/kg		
		- compound feed for fish	-	0,2 mg/kg		
		- compound feed for dogs, cats, ornamental fish and fur animals	-	0,3 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

[16] The maximum levels refer to the total level of mercury.

[11] Calcium and magnesium carbonate refers to the natural mixture of calcium carbonate and magnesium carbonate as described in European Catalogue of feed materials.

(*): The maximum level is applicable on wet weight basis

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[(1)]	Rejection limit[(1)]	Source	Supplementary requirements
Chemical: Heavy metals						
C27	Lead *	Feed materials, with the exception of:	-	10 mg/kg	Commission Regulation (EU) No 2019/1869 amending Annex I to Directive 2002/32/EC	
		- forage [9]	-	30 mg/kg		
		- phosphates; calcareous marine algae and calcareous marine shells;	-	15 mg/kg		
		- calcium carbonate; calcium and magnesium carbonate [11]	-	20 mg/kg		
		- yeast	-	5 mg/kg		
		Feed additives belonging to the functional group of compounds of trace elements, with the exception of:		100 mg/kg		
		- zinc oxide		400 mg/kg		
		- manganous oxide, ferrous carbonate, cupric carbonate, copper (I) oxide		200 mg/kg		
		Feed additives belonging to the functional group of binders and anti-caking agents, with the exception of:		30 mg/kg		
		- clinoptilolite of vulcanic origin; natrolite-phonolite		60 mg/kg		
		Premixtures [2]		200 mg/kg		
		Complementary feed, with the exception of:	-	10 mg/kg		
		- mineral feed	-	15 mg/kg		
		- long-term supply formulations of feed for particular nutritional purposes with a concentration of trace elements higher than 100 times the established maximum content in complete feed.	-	60 mg/kg		
		Complete feed	-	5 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
[9] Green fodder includes products which are intended for feeding to animals such as hay, silage, fresh grass, etc.
[2]The maximum level established for premixtures takes into account the additives with the highest level of lead and cadmium and not the sensitivity of the different animal species to lead and cadmium. As provided in Article 16 of Regulation (EC) No 1831/2003 of the European Parliament and of the Council of 22 September 2003 on additives for use in animal nutrition, in order to protect animal and public health, it is the responsibility of the producer of premixtures to ensure that, in addition to compliance with the maximum levels for premixtures, the instructions for use on the premixture are in accordance with the maximum levels for complementary and complete feed.
[11] Calcium and magnesium carbonate refers to the natural mixture of calcium carbonate and magnesium carbonate as described in the European Catalogue of feed materials.
* for the determination of lead in kaolinitic clay and in feed containing kaolinitic clay, the maximum level refers to an analytical determination of lead, whereby extraction is performed in nitric acid (5 % w/w) for 30 minutes at boiling temperature. Equivalent extraction procedures can be applied for which it can be demonstrated that the used extraction procedure has an equal extraction efficiency.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Mycotoxin						
C28	Ergot (Claviceps purpurea)	Feed materials and compound feed containing unground cereals	-	1,000 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Salts						
C29	Sodium	- Feed materials for delivery to cattle farms, and - Wet mixes for delivery to cattle farmers	8 g/kg (dry matter)		GMP+	If the action limit is exceeded then a warning or processing advice must be ***demonstrably communicated*** to the customer. Supply of additional water to the animals is also important to avoid health problems. More recommendations in the event of excess of the action limit can be found in GMP+ D4.13 *Salts in rations with wet feeds for fattening pigs and sows*

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Heavy metals						
C30	Nickel	Oils and fats from vegetable or animal origin	20 mg / kg (on a fat basis)	50 mg / kg (on a fat basis)	GMP+	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Other undesirable substances and products						
C31	Nitrites	Feed materials, with the exception of:	-	15 mg/kg (expressed in sodium nitrite)	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	
		- Fish meal	-	30 mg/kg (expressed in sodium nitrite)		
		- silage		-		
		- Products and by-products from sugar beet and sugarcane and from starch production and alcoholic drink production.	-	-		
		Complete feed, with the exception of:	-	15 mg/kg (expressed in sodium nitrite)		
		- complete feed for dogs and cats with a moisture content exceeding 20 %.	-	-		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Harmful Botanical impurities						
C32	Weed seeds and unground and uncrushed fruits containing alkaloids, glucosides or other toxic substances separately or in combination including	Feed material and compound feed	-	3,000 mg/kg	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Fysical: Harmful Botanical impurities						
C32a	- Datura sp.	Feed material and compound feed	-	1,000 mg/kg	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Other undesirable substances and products						
C33	Insoluble impurities	Rendered fats from ruminants	-	0,15%	Commission Regulation (EU) 142/2011, Annex X, Chapter II, Section 3	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Mycotoxin						
C34	Ochratoxin A	Compound feed on full ration basis for: - sows and consumption pigs and piglets - poultry	 0.04 mg/kg 0.16 mg/kg	 0.05 mg/kg 0.2 mg/kg	GMP+	- The European Commission has published recommendation 2006/576/EC regarding the guidance values for this mycotoxin. GMP+ International has established other values to comply.
		Compound feed for cats and dogs	0,01 mg/kg		Commission Recommendation 2006/576/EC	
		Feed material (supplied to the livestock farmer for immediate feeding) for ([21]) - Sows and pigs and piglets - Poultry	 0.05 mg/kg 0.2 mg/kg	 0.15 mg/kg 0.6 mg/kg	GMP+	
		Feed materials for other purposes - Cereals and cereal products ([22])	 0,25 mg/kg		Commission Recommendation 2006/576/EC	The supplier provides information to the client in the event of infringement of the action limit for the level of the undesirable substance and provides advice on processing the product in the ration

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

(21) The supplier provides information to the livestock farmer in the event of infringement of the action limit for the level of the undesirable substance and provides advice on processing the product in the days ration

(22)The term 'Cereals and cereal products' includes not only the feed materials listed under heading 1 'Cereal grains and products derived thereof' of the list of feed materials referred to in part C of the European Catalogue of feed materials but also other feed materials derived from cereals in particular cereal forages and roughages.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Toxic substances						
C35a	Polycyclic Aromatic Hydrocarbons (PAH4)	Oils and fats (excluding palm(kernel)-, coconutoil and products derived thereof) Palm(kernel)-, coconutoil and and products derived thereof)	160 µg/kg (on fat basis) 320 µg/kg (on fat basis)	200 µg/kg (on fat basis) 400 µg/kg (on fat basis)	GMP+	- (PAH4=sum of benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene and chrysene See the GMP+ D documents: - GMP+ D4.14 - GMP+ D4.15 Reports - D Documents · GMP+ International Portal

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Antinutritional factors: Glucosides						
C38	Seeds and husks from Ricinus communis L., Croton tiglium L. and Abrus precatorius L. as well as their processed derivatives (in so far determinable by analytical microscopy), separately or in combination	Feed materials and compound feed.	-	10 mg/kg [23]	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
[23] Includes also seed husk fragments.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Salts						
C39	Sulphate	- Feed materials for delivery to cattle farms, and - Wet mixes for delivery to cattle farmers which are preserved with sulphuric acid and not for products which by nature are rich in sulphur	8 g/kg (dry matter)		GMP+	If the action limit is exceeded then a warning or processing advice must be ***demonstrably communicated*** to the customer. Supply of additional water to the animals is also important to avoid health problems. More recommendations in the event of excess of the action limit can be found in GMP+ D4.13 *Salts in rations with wet feeds for fattening pigs and sows*

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Antinutritional factors: Alkaloids						
C40	Theobromine	Complete feed, with the exception of: - complete feed for pigs - complete feed for dogs, rabbits, horses and fur animals	- - -	300 mg/kg 200 mg/kg 50 mg/kg	Commission Regulation (EU) No 574/2011 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Antinutritional factors: Glucosides						
C38	Seeds and husks from Ricinus communis L., Croton tiglium L. and Abrus precatorius L. as well as their processed derivatives (in so far determinable by analytical microscopy), separately or in combination	Feed materials and compound feed.	-	10 mg/kg [23]	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
[23] Includes also seed husk fragments.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical:	**Antinutritional factors: Glucosides**					
C42	Volatile mustard oil	Feed materials, with the exception of:	-	100 mg/kg (calculated as allylisothiocyanate)	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	
		- Camelina seed and products derived thereof (*), products derived from mustard seed (*), rape seed and products derived thereof.	-	4,000 mg/kg (calculated as allylisothiocyanate)		
		Complete feed, with the exception of:	-	150 mg/kg (calculated as allylisothiocyanate)		
		- Complete feeds for cattle (except calves), sheep (except lambs) and goats (except kids)	-	1,000 mg/kg (calculated as allylisothiocyanate)		
		- Complete feeds for pigs (except of piglets) and poultry	-	500 mg/kg (calculated as allylisothiocyanate)		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

* : Upon request of the competent authorities, the responsible operator must perform an analysis to demonstrate that the content of total glucosinolates is lower than 30 mmol/kg. The method of analysis of reference is EN-ISO 9167-1:1995

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical:	**Antinutritional factors: Other**					
C43	Free gossypol	Feed materials, with the exception of:	-	20 mg/kg	Commission Regulation (EU) No 2019/1869 amending Annex I to Directive 2002/32/EC	
		- cotton seed	-	6 000 mg/kg		
		- cotton seed cake and cotton seed meal	-	1,200 mg/kg		
		Complete feed, with the exception of:	-	20 mg/kg		
		- complete feed for cattle (except calves)	-	500 mg/kg		
		- complete feed for sheep (except lambs) and goats (except kids),	-	300 mg/kg		
		- complete feed for poultry (except laying hens) and calves	-	100 mg/kg		
		- complete feed for rabbits, lambs, kids and pigs (except piglets)	-	60 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical:	**Mycotoxin**					
C44	Zearalenon	Compound feed on full ration basis for: - sows and consumption pigs - young pigs - young cattle and dairy cattle	 0.2 mg/kg 0.08 mg/kg 0.4 mg/kg	 0.25 mg/kg 0.1 mg/kg 0.5 mg/kg	GMP+	- The European Commission has published "Recommendation 2006/576/EC" regarding the guidance values for this mycotoxin. GMP+ International has established other values to comply.
		Compound feed for: - puppies, kittens, dogs and cats for reproduction - adult dogs and cats other than for reproduction - sheep (including lamb) and goats (including kids)	 0,1 mg/kg 0,2 mg/kg 0,5 mg/kg		Commission Recommendation 2006/576/EC	
		Feed material (supplied to the livestock farmer for immediate feeding) for ([21]) - sows and pigs - young pigs - young cattle and dairy cattle	 0.25 mg/kg 0.1 mg/kg 0,5 mg/kg	 0.75mg/kg 0.3 mg/kg 1.5 mg/kg	GMP+	
		Feed materials for other purposes - Cereals and cereal products ([22]) with the exception of maize by-products - Maize by-products	 2 mg/kg 3 mg/kg		Commission Recommendation 2006/576/EC	The supplier provides information to the client in the event of infringement of the action limit for the level of the undesirable substance and provides advice on processing the product in the ration

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
[21] The supplier provides information to the livestock farmer in the event of infringement of the action limit for the level of the undesirable substance and provides advice on processing the product in the days ration
[22]The term 'Cereals and cereal products' includes not only the feed materials listed under heading 1 'Cereal grains and products derived thereof' of the list of feed materials referred to in part C of the European Catalogue of feed materials but also other feed materials derived from cereals in particular cereal forages and roughages.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Pesticides (Crop protection agents)						
C62	Pesticides	Animal feed		The statutory limits of EU Regulation 396/2005 are valid. See part 4 of this document	Regulation (EC) No 396/2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin.	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Mycotoxin						
C109	Fumonisin B1 + B2	Feed materials - maize and maize products *	60 mg/kg		GMP+ (Commission Recommendation No 2006/576/EC)	Particular attention has to be paid to cereals and cereals products fed directly to the animals that their use in a daily ration should not lead to the animal being exposed to a higher level of these mycotoxins than the corresponding levels of exposure where only the complete feedingstuffs are used in a daily ration.
		Complementary and complete feedingstuffs for: - pigs, horses (Equidae), rabbits and pet animals	5 mg/kg			
		- fish	10 mg/kg			
		- poultry, calves (< 4 months), lambs and kids	20 mg/kg			
		- adult ruminants (> 4 months) and mink	50 mg/kg			

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

[*]The term 'Maize and maize products' includes not only the feed materials derived from maize listed under heading 1 'Cereal grains, their products and by-products' of the non-exclusive list of main feed materials referred to in the Annex, part B of Directive 96/25/EC but also other feed materials derived from maize in particular maize forages and roughages. (note: Directive 96/25/EC is replaced by the Catalogue of feed materials)

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit	Rejection limit	Source	Supplementary requirements
Chemical: Mycotoxin						
C113	T-2 and HT-2 toxin, Sum of	Unprocessed cereals: - barley (including malting barley) and maize - oats (with husk) - wheat, rye and other cereals	 200 µg/kg (on product basis) * 1000 µg/kg(on product basis) * 100 µg/kg(on product basis) *		GMP+ (Commission Recommendation No 2013/165/EC)	Unprocessed cereals are cereals which have not undergone any physical or thermal treatment other than drying, cleaning and sorting.
		Cereal products for feed and compound feed - oat milling products (husks) - other cereal products - compound feed, with the exception of feed for cats	 2000 µg/kg *[1] 500 µg/kg *[1] 250 µg/kg *[1]			
		Compound feed for cats	0,05 mg/kg *[1]		GMP+ (Commission Recommendation No 2013/637/EC)	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
[*]The levels referred to in this Annex are indicative levels above which, certainly in the case of repetitive findings, investigations should be performed on the factors leading to the presence of T-2 and HT-2 toxin or on the effects of feed and food processing. The indicative levels are based on the occurrence data available in the EFSA database as presented in the EFSA opinion. The indicative levels are not feed and food safety levels.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit	Rejection limit	Source	Supplementary requirements
Physical: Bodies foreign to the product						
F30	Packaging material	- Feed materials for delivery to livestock farms, and - Wet mixes for delivery to livestock farmers	-	1.5 g/kg (dry matter basis)	GMP+	Packaging materials are fibres of paper and board, fragments of plastic, aluminium foil and metal, plastic clips, metal wires, etc. Via manual separation and weighing See GMP+ BA 3: Negative list This norm was included subject to the outcome of the discussion taking place in the European Commission.

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Chemical: Other undesirable substances and products						
C134	Polyethylene	- Fat and oil products (feed materials)	0.25 g/kg (on fat basis)	0.5 g/kg (on fat basis)	GMP+	See GMP+ BA 3: Negative list.

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Fysical: Harmful Botanical impurities						
F5	Unhusked beech mast - Fagus sylvatica L.	Feed materials and compound feed	-	Seeds and fruits of the plant species listed opposite as well as their processed derivatives may only be present in feed in trace amounts not quantitatively determinable	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Fysical: Harmful Botanical impurities						
F6	Chinese mustard – Brassica juncea (L.) Czern. and Coss. ssp. juncea var. lutea Batalin	Feed materials and compound feed	-	Seeds may only be present in feed in trace amounts not quantitatively determinable	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Fysical: Harmful Botanical impurities						
F7	Ethiopian mustard – Brassica carinata A. Braun	Feed materials and compound feed	-	Seeds may only be present in feed in trace amounts not quantitatively determinable	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Fysical: Harmful Botanical impurities						
F8	Indian mustard - Brassica juncea (L.) Czern. and Coss. ssp. integrifolia (West.) Thell.	Feed materials and compound feed	-	Seeds may only be present in feed in trace amounts not quantitatively determinable	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Fysical: Harmful Botanical impurities						
F10	Purghera - Jatropha curcas L.	Feed materials and compound feed	-	Seeds and fruits of the plant species listed opposite as well as their processed derivatives may only be present in feed in trace amounts not quantitatively determinable	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Fyscial: Harmful Botanical impurities						
F12	Sareptian mustard - Brassica juncea (L.) Czern. and Coss. ssp. juncea	Feed materials and compound feed	-	Seeds may only be present in feed in trace amounts not quantitatively determinable	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Fysical: Harmful Botanical impurities						
F13	Seeds from Ambrosia spp.	Feed materials (*), with the exception of: - Millet (grains of *Panicum miliaceum* L.) and sorghum (grains of *Sorghum bicolor* (L) Moench s.l.) not directly fed to animals (*)	-	50 mg/kg 200 mg/kg	Commission Regulation (EU) No 2015/186amending Annex I to Directive 2002/32/EC	
		Compound feed containing unground grains and seeds	-	50 mg/kg		

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

(*): In case unequivocal evidence is provided that the grains and seeds are intended for milling or crushing, there is no need to perform a cleaning of the grains and seeds containing con-compliant levels of seeds of *Ambrosia* spp. before milling or crushing on the condition that: —the consignment is transported as a whole to the milling or crushing plant, and — the milling or crushing plant is informed in advance of the presence of high level of *Ambrosia* spp. seeds in order take additional prevention measures to avoid dissemination into the environment, and —solid evidence is provided that prevention measures are taken to avoid dissemination of *Ambrosia* spp. seeds into the environment during transport to the crushing or milling plant, and — the competent authority agrees to the transport, after having ensured that the abovementioned conditions are fulfilled. In case these conditions are not fulfilled, the consignment must be cleaned before any transport into the EU and the screenings must be appropriately destroyed.'

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Fysical: Harmful Botanical impurities						
F14	Black mustard – Brassica nigra (L.) Koch	Feed materials and compound feed	-	Seeds may only be present in feed in trace amounts not quantitatively determinable	Commission Regulation (EU) No 1275/2013 amending Annex I to Directive 2002/32/EC	

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.
Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Summary of GMP+ Specific Feed Safety Limits for the animal feed sector

	Contaminant	Product	Action limit[1]	Rejection limit[1]	Source	Supplementary requirements
Fysical: Other undesirable substances and products						
F26	Radioactivity Sum of Cs-134 and Cs-137	Feed intended for: - cattle and horses - pig - poultry - fish (*)		 100 (Bq/kg) 80 (Bq/kg) 160 (Bq/kg) 40 (Bq/kg)	Commission Implementing Regulation (EU) No 2016/6 is amended by Commission Implementing Regulation (EU) No . 2017/2058 . (note: The new regulation does not concern adoption of new standards)	- Special conditions governing the import of feed originating in or consigned from Japan following the accident at the Fukushima nuclear power station. - In order to ensure consistency with maximum levels currently applied in Japan, these values replace on a provisional basis the values laid down in Regulation (Euratom) 2016/52.

[1] Action limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then an investigation into the cause should be undertaken and corrective measures should be taken to remove or control that cause. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

Rejection limit: A feasible limit agreed in consultation with the sector, supplier or customer. If this limit is exceeded then the product is not suitable for use as feed material or animal feed. Maximum levels in mg/kg (ppm) of the feed materials or compound feeds, derived to a moisture content of 12% unless mentioned differently.

* With the exemption of feed for ornamental fish.

4. Residue levels of pesticides in feeds

4.1. Introduction

The maximum residue levels of pesticides (MRL) of GMP+ FC scheme are based on EU Regulations. These are:

- Regulation (EC) No. 396/2005. This regulation includes the MRLs for unprocessed products of vegetable and animal origin intended for human consumption and for feed. As much as the MRLs apply to feed they are applicable to both feed for food-producing animals and for non-food-producing animals.

  The structure/design of the Regulation is as such, that in many cases it is not immediately possible to indicate a MRL for a certain combination of feed / pesticide. Therefore this chapter provides guidance in finding the applicable MRL.
- Directive 2002/32/EG, Annex I, part IV regarding undesirable substances in feed. This Directive contains MRLs for certain specific Organochlorine compounds. Those MRL's are included in part 3 of this document (GMP+ BA1).

4.1.1. List of terms

Below you'll find a list of the most common (used) terms with a brief explanation.

MRL: A maximum residue level (MRL) is the highest level of a pesticide residue that is legally tolerated in or on food or feed when pesticides are applied correctly (Good Agricultural Practice).

EU Pesticides database: This database is created by the European Commission. The EU Pesticides database can be consulted on Commissions website to search for the MRLs applicable to each pesticide and to each crop/product of animal origin.

Log Pow: The octanol-water partition coefficient (Pow) of a pesticide indicates whether a pesticide is water or fat-soluble. When a log Pow of a pesticide exceeds 3, the pesticide is considered totally fat-soluble.
Note: *Another factor to be taken into account is the affinity of the substance for the extraction solvent. In fact, in absence of information regarding the fat solubility of a particular pesticide, the affinity of the pesticide for the extraction solvent may also be considered. Some pesticides can show the tendency to concentrate in the oil phase due to their solubility in the extraction solvent. The behavior of such pesticides will however have to be analyzed on a case-by-case basis. This is the responsibility of the food or feed business operator. Read GMP+ D3.19 FAQ Pesticides residues for more information about the application of processing factors.*

Suffix (F): The EU Pesticides database indicates, by putting (F) behind the particular pesticide, which pesticides are totally fat soluble.

Processing factor [synonym: Transfer factor; concentration factor]: Regulation No. 396/2005 sets MRLs for unprocessed/primary products, like oilseeds. MRLs for pesticides in processed products, like crude oils, are not specifically set in EU legislation. According to Article 20 of Regulation (EC) No. 396/2005, MRLs for pesticides in processed products have to be derived from the MRLs for unprocessed products, taking into account the concentration or dilution caused by the processing (E.g. concentration caused by drying- and extraction processes).

Annex VI of Regulation (EC) No. 396/2005 should contain a list of specific concentration or dilution factors for certain processing and/or mixing steps or for certain processed and/or composite products.
NOTE: *At this time Annex VI was not yet completed.*
Read GMP+ D3.19 FAQ Pesticides residues for more information about the application of processing factors.

Footnote 1: For a limited number of products the MRL in Regulation (EC) No. 396/2005 may not apply. This is according to the so-called "footnote 1" of Annex 1 of Regulation (EC) No. 396/2005.
Currently there are a lot of uncertainties about the implementation of this footnote. Read GMP+ D3.19 FAQ Pesticides residues for more information.

4.2. The establishment of an MRL conform Regulation (EC) No. 396/2005

4.2.1. General

The MRLs are to be found in "EU Pesticides database" a database which was created by the European Commission. In this database you will, almost always, find MRLs for unprocessed products. This means that a number of calculations must be carried out both for the determination of the MRL in a processed/derived product (for example, sunflower oil, maize gluten meal) and for the determination in composite products (for example complete feed for young chickens, complementary feed for cattle).

The correct MRL can be determined using the questionnaires as mentioned in table 1. Per product group defined, there is a specific questionnaire. In total, there are 3 questionnaires. The basic principle of these questionnaires is that there is a known pesticide and that the associated MRL must be found for a particular feed.

Table 1: Definitions and questionnaires

Product group	Definition
Unprocessed product	Single unprocessed/basic/primary/ product of vegetable or animal origin (wheat, barley, linseed, sunflower seeds, soya bean, peas, shrimps)
Processed products	Single, treated/processed or derived product, originating from an unprocessed product (wheat flour, semolina pellets, potato press fibres, soya flakes, Soya (bean) expeller, linseed oil, peapod meal, fish meal)
Composite product	Composite product consisting of at least two components being unprocessed products, processed products and/or feed additives. (complete feed, supplementary feed, petfood, grain mixes, premixtures)

*** NOTE**: These definitions have only been drawn up to improve the readability of Chapter 4 and have no value or legitimacy outside this chapter.

4.2.2. Questionnaire for unprocessed products

1. Check if Directive 2002/32/EG contains an MRL for your unprocessed product / pesticide combination. Have you found a match?
   - **Yes** You have found the MRL for the pesticide **(end)**.
   - **No** Go to question 2

2. Is your product a unprocessed product or product group for which "footnote 1" from Annex 1 of Regulation (EC) No. 396/2005 applies? See par. 4.1.1 for more information about footnote 1.

   - **Yes** There is no MRL in accordance with Regulation (EC) No. 396/2005 for your unprocessed product yet.
     Note: Companies must, at all times, make a risk assessment of the detected pesticide content in order to ensure the feed safety:
     - *It is possible that the country of origin does have a MRL.*
     - *Also in the Codex Alimentarius MRL's are available of pesticide-commodity combination.*
   - **No** Go to question 3.

From now on, you can use the EU Pesticides database.

3. Is your unprocessed product included in Annex I of Reg. (EC) No. 396/2005, either as an individual product (column 3, 4 and 5) or as a group of products (column 2) or in the EU Pesticides database?
   - **Yes** Go to question 4.

No Option 1: Your unprocessed product is probably not a single untreated/unprocessed product of vegetable or animal origin. Check your product using the definitions in Table 1. Consult your supplier if needed.
Option 2: If your unprocessed product still is a single unprocessed product of animal or vegetable origin, there is no MRL in accordance with Regulation (EC) No. 396/2005 for your unprocessed product (**end**)

4. Is the pesticide for which you are searching an MRL included in the EU pesticides database?
   Yes Go to question 5.
   No The pesticide has not yet been specified. The applicable MRL is 0.01 mg/kg for unprocessed products. (**end**)

5. In the EU Pesticides database select, your unprocessed product and the pesticide for which you want the MRL. Click the button "Search current MRL". You have found the MRL. Place the mouse cursor on the MRL or click on the pesticide for additional information. Carefully read any footnotes applicable to the MRL (**end**).

4.2.3. Questionnaire for processed products

1. Check if Directive 2002/32/EG contains an MRL for your processed product / pesticide combination. Have you found a match?
   Yes You have found the MRL for the pesticide **(end**).
   No Go to question 2

2. Is "footnote 1" applicable for your processed product? See par. 4.1.1 for more information about "footnote 1".
   Yes There is not yet an MRL in accordance with Regulation (EC) No. 396/2005 for your processed product.
   Note: Companies must, at all times, make a risk assessment of the detected pesticide content or verify if the MRL is not exceeded (where applicable taking the relevant processing factor into account), in order to ensure the feed safety:
   - *It is possible that the country of origin does have a MRL.*
   - *Also in the Codex Alimentarius MRL's are available of pesticide-commodity combination.*

   No Go to question 3.

3. Is your processed product included in Annex I of Reg. (EC) No. 396/2005, either as a by-product (column 2 in combination with 3, 4, 5 or 6) or as a group of products (column 2) or in the form of the unprocessed product?
   Yes Go to question 4.
   No Option 1: Your processed product is probably not a product of vegetable or animal origin. Check your product using the definitions in Table 1. Consult your supplier if needed.

Option 2: If your processed product still is a product of vegetable or animal origin, there is no MRL in accordance with Regulation (EC) No. 396/2005 for your processed product.

You have established that the MRL from this regulation apply to your processed product. Use the questionnaire for unprocessed products (4.2.2.) question 4 and further, to determine the MRL for the unprocessed product (the original product or the relevant product group). Proceed with question 4.

4. Is the processed product for which the MRL is established equal to the processed product for which you are looking for an MRL?
   - **Yes** The MRL you have found is the MRL for this processed product / pesticide combination. (**end**)
   - **No** Go to question 5.

5. In Reg. (EC) No. 396/2005, Annex VI, is there a processing (concentration- or dilution factor) factor established for your processed product or for the treatment / processing which is the basis for your processed product?
   See par. 4.1.1 for more information about processing factors.
   - **Yes** Use this factor to determine the final MRL for this processed product / pesticide combination. **(end)**
   - **No** Go to question 6.

6. Is the treatment / processing for this processed product based on the separation of a fat and water fraction?
   Note: "processing" also covers other processes than those based on separating fat and water fraction (such as grinding rice kernels). For such processes, you can also apply processing factors, if well-founded.
   - **Yes** Go to question 7.
   - **No** The processing / treatment has no effect on the residue level, the MRL which you have found is the final MRL for this processed product/pesticide combination. (**end**)

In the rest of this questionnaire you determine whether there is an accumulation of residues in the fat fraction or in the fat-free fraction.

7. Does the name of the pesticide in the EU Pesticides database have the suffix (F)?
   - **Yes** The pesticide is soluble in fat. Determine, using the fat percentage in the original product and in your processed product, the dilution or concentration factor and divide or multiply this by the MRL found for the original product(group) in order to determine the final MRL. **(end)**

Note: FEDIOL has issued a paper on this subject, in which some processing factors (for oil and fat products) are laid down. You can use these processing factor in your calculation**.**

No Go to question 8.

8. Search in the Pesticide Properties DataBase for the pesticide in question and note the "Octanol/water partition coefficient" (Pow). The log Pow is a indicator of the solubility in water or fat of the pesticide. Is the log Pow greater or equal to 3 [1]?

Yes The pesticide is soluble in fat. Determine, using the fat percentage in the original product and in your processed product, the dilution or concentration factor and divide or multiply this by the MRL found for the original product(group) in order to determine the final MRL. **(end)**

No Go to question 9.

9. Is the log Pow is ≥ 1 and < 3?

Yes It can be assumed that most of the pesticide will concentrate in the oil, even though not totally. In this case, to be on the safe side, the MRL for crude oil corresponds to the seed MRL multiplied by 0,909 x the theoretical processing factor of the specific primary product.

No Go to question 10.

10. Is the log Pow between 0 and <1,

Yes It can be assumed that the pesticide will be present in both the oil and water phase. The MRL from the EU pesticide database is applicable.

No Go to question 11.

11. Is the log Pow < 0?

Yes It can be assumed that the pesticide will concentrate in the water phase. The MRL from the EU pesticide database is applicable.

NOTE: In this case, where there is a pesticide which is soluble in water, there is dilution in the fat fraction and concentration in the fat-free fraction! In case, a log Pow is not available in the PPDB, other reliable sources may be consulted. The method described in this section for the determination of maximum residue limits (MRL) in fats and oils also applies to fatty acids.
For more information about the application and calculation of processing factors for fat and oil products see the MVO website and the FEDIOL paper.

[1] Source:
- Regulation (EC) No. 396/2005, Annex II, footnote nr. 6
- Fediol document "Establishing processing factors for vegetable oils and fats"

4.2.4. Questionnaire for composite products

1. Check if Directive 2002/32/EG contains an MRL for your product / pesticide combination. Have you found a match?
   Yes You have found the MRL for the pesticide **(end)**.
   No Go to question 2

2. Specify the individual components of your composite products. In Reg. (EC) No. 396/2005, Annex VI, has a processing (concentration or dilution) factor has been established for :
   - your composite product,
   - a certain fraction of your composite product,
   - a processed product that is part of your composite product?

   See par. 4.1.1 for more information about processing factors.
   Yes Use this factor or factors to determine the final MRL for this specific part of your composite product and to determine the pesticide in question. Go to question 3.
   No Go to question 3.

3. Does your composite products contain basic products among other things?
   Yes For each of these components go through the questionnaire in par. 4.2.2. In order to determine the MRLs for these components. Go to question 4
   No Go to question 4.

4. Your composite products contains (among other things) processed products. For each of these components go through the questionnaire in par. 4.2.3. In order to determine the MRLs for these components. Go to question 4 5.

5. Have you determined an MRL for all the components for which an MRL has been set and have you taken account of the processing (concentration or dilution) factors laid down in question 2?
   Yes Go to question 6.
   No Go through this questionnaire again starting at question 2

6. Now determine the MRL for the specific pesticide in the composite product in the following way
   $MRL_x = \{(N_xC1 * C1) + (N_xC2 * C2) .... + (N_xCn * Cn)\}/ \Sigma C1{:}Cn$

Where: MRL_x	:	Is the maximum residue for pesticide X in the composite products
N_xCn	:	The MRL found for the component / group of components C (1 to n)
Cn	:	The percentage in the composite products for component / group of components C (1 to n)
$\Sigma C1{:}Cn$	:	The sum of the percentages of components for which an MRL for pesticide X actually applies

4.2.5. Exceptions (under conditions) in Regulation (EC) No. 396/2005

Fumigants

Member States may authorize, further to a post-harvest treatment with a fumigant on their own territory, residue levels for an active substance which exceed the limits specified in Annexes II of and III Regulation (EC) No. 396/2005 for a product covered by Annex I of Regulation (EC) No. 396/2005 where the active substance/product combinations are listed in Annex VII provided that:

a) such products are not intended for immediate consumption;
b) appropriate controls are in place to ensure that such products cannot be made available to the end user or consumer, if they are supplied directly to the latter, until the residues no longer exceed the maximum levels specified in Annexes II or III;
c) the other Member States and the Commission have been informed of the measures taken.

The pesticides for which this permission applies and also the products involved are specified in Annex VII of Reg. (EC) No. 396/2005.

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