



**DIRECTIVE 2002/32/EC OF THE EUROPEAN PARLIAMENT
AND OF THE COUNCIL**

of 7 May 2002

on undesirable substances in animal feed

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 152(4)(b) thereof,

Having regard to the proposal from the Commission ⁽¹⁾,

Having regard to the opinion of the Economic and Social Committee ⁽²⁾,

After consulting the Committee of the Regions,

Acting in accordance with the procedure laid down in Article 251 of the Treaty ⁽³⁾, in the light of the joint text approved by the Conciliation Committee on 26 March 2002,

Whereas:

- (1) Many amendments need to be made to Council Directive 1999/29/EC of 22 April 1999 on the undesirable substances and products in animal nutrition ⁽⁴⁾. In the interests of clarity and efficiency the said Directive should be recast.
- (2) Livestock production occupies a very important place in farming in the Community and satisfactory results in terms of public and animal health, animal welfare, the environment and the livestock producers' finances depend to a large extent on the use of appropriate good quality feedingstuffs.
- (3) Rules on feedingstuffs are needed to ensure agricultural productivity and sustainability and to make it possible to ensure public and animal health, animal welfare and the environment. In addition, there is a need for comprehensive regulation on hygiene in order to guarantee good quality feedingstuffs on individual farms even when they are not commercially produced.
- (4) The same rules concerning the quality and safety of products intended for animal feed have to apply to the quality and safety of water consumed by the animals. Although the definition of feedingstuffs does not preclude water being considered as feedingstuff, it is not included in the non-exhaustive list of main feed materials, laid down by Council Directive 96/25/EC of 29 April 1996 on the circulation and use of feed materials ⁽⁵⁾. The issue of water to be considered as feedingstuffs needs to be examined in the framework of that Directive.
- (5) It has been established that additives can contain undesirable substances. The scope of the Directive should therefore be extended to cover additives.
- (6) Products intended for animal feed may contain undesirable substances which can endanger animal health or, because of their presence in livestock products, human health or the environment.

⁽¹⁾ OJ C 89 E, 28.3.2000, p. 70 and OJ C 96 E, 27.3.2001, p. 346.

⁽²⁾ OJ C 140, 18.5.2000, p. 9.

⁽³⁾ Opinion of the European Parliament of 4 October 2000 (OJ C 178, 22.6.2001, p. 160), Council Common Position of 17 September 2001 (OJ C 4, 7.1.2002, p. 1) and Decision of the European Parliament of 12 December 2001 (not yet published in the Official Journal). Decision of the European Parliament of 10 April 2002 and Decision of the Council of 22 April 2002.

⁽⁴⁾ OJ L 115, 4.5.1999, p. 32.

⁽⁵⁾ OJ L 125, 23.5.1996, p. 35. Directive as last amended by European Parliament and Council Directive 2000/16/EC (OJ L 105, 3.5.2000, p. 36).

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- (7) It is impossible to eliminate fully the presence of undesirable substances but it is important that their content in products intended for animal feed should be reduced, with due regard to the substances' acute toxicity, bio-accumulability and degradability, in order to prevent undesirable and harmful effects. It is at present inappropriate to fix this content below the levels detectable by methods of analysis to be defined for the Community.
- (8) The methods for determining residues of undesirable substances are becoming increasingly sophisticated, so that even quantities of residues which are negligible for animal and human health can be detected.
- (9) Undesirable substances may be present in products intended for animal feed only in accordance with the conditions laid down in this Directive and may not be used in any other way for the purposes of animal feed. This Directive should therefore apply without affecting other Community provisions on feedingstuffs, and particularly the rules applicable to compound feedingstuffs.
- (10) This Directive must apply to products intended for animal feed as soon as they enter the Community. It must therefore be stipulated that the maximum levels of undesirable substances that are set apply in general from the date on which the products intended for animal feed are put into circulation or used, at all stages, and in particular as soon as they are imported.
- (11) Products intended for animal feed must be sound, genuine and of merchantable quality and therefore when correctly used must not represent any danger to human health, animal health or to the environment or adversely affect livestock production. Using or putting into circulation products intended for animal feed which contain levels of undesirable substances that exceed the maximum levels laid down in Annex I must therefore be prohibited.
- (12) The presence of certain undesirable substances in complementary feedingstuffs must be limited by fixing appropriate maximum levels.
- (13) While in certain cases a maximum level is fixed, taking account of background levels, continued effort is still needed to restrict the presence of some specific undesirable substances to the lowest possible levels in products intended for animal feed so as to reduce their presence in the feed and food chain. It should therefore be permitted, under this Directive, to lay down action thresholds well below the maximum levels fixed. Where such action thresholds are exceeded, investigations must be carried out to identify the sources of the undesirable substances and steps taken to reduce or eliminate such sources.
- (14) Where animal or human health or the environment is endangered, Member States should be allowed temporarily to reduce the fixed maximum permissible levels, to fix maximum levels for other substances or to prohibit the presence of such substances in products intended for animal feed. In order to ensure a uniform application, any amendments to Annex I to this Directive should be decided on by emergency Community procedure, on the basis of supporting documents and the precautionary principle.
- (15) Products intended for animal feed that satisfy the requirements of this Directive may not be subject to restrictions on entry into circulation, as regards the level of undesirable substances they contain, other than those provided for in this Directive and in Council Directive 95/53/EC of 25 October 1995 fixing the principles governing the organisation of official inspections in the field of animal nutrition ⁽¹⁾.

⁽¹⁾ OJ L 265, 8.11.1995, p. 17. Directive as last amended by Directive 2001/46/EC of the European Parliament and of the Council (OJ L 234, 1.9.2001, p. 55).

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- (16) Member States must make appropriate monitoring arrangements pursuant to Directive 95/53/EC to ensure that the requirements regarding undesirable substances are met when products intended for animal feed are used or circulated.
- (17) An appropriate Community procedure is needed for adapting the technical provisions in the Annexes to this Directive in the light of developments in scientific and technical knowledge.
- (18) In order to facilitate implementation of the proposed measures, there should be a procedure for close cooperation between the Member States and the Commission within the Standing Committee for Feedingstuffs set up by Decision 70/372/EEC ⁽¹⁾.
- (19) The measures necessary for the implementation of this Directive should be adopted in accordance with Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission ⁽²⁾,

HAVE ADOPTED THIS DIRECTIVE:

Article 1

1. This Directive deals with undesirable substances in products intended for animal feed.
2. This Directive shall apply without prejudice to the provisions in:
 - (a) Council Directive 70/524/EEC of 23 November 1970 concerning additives in feedingstuffs ⁽³⁾;
 - (b) Council Directive 96/25/EC and Council Directive 79/373/EEC of 2 April 1979 on the marketing of compound feedingstuffs ⁽⁴⁾;
 - (c) Council Directive 76/895/EEC of 23 November 1976 relating to the fixing of maximum levels for pesticide residues in and on fruit and vegetables ⁽⁵⁾, Council Directive 86/362/EEC of 24 July 1986 on the fixing of maximum levels for pesticide residues in and on cereals ⁽⁶⁾, Council Directive 86/363/EEC of 24 July 1986 on the fixing of maximum levels for pesticide residues in and on foodstuffs of animal origin ⁽⁷⁾ and Council Directive 90/642/EEC of 27 November 1990 on the fixing of maximum levels for pesticide residues in and on certain products of plant origin, including fruit and vegetables ⁽⁸⁾, where these residues are not listed in Annex I to this Directive;
 - (d) Community legislation concerning veterinary matters relating to public health and animal health;
 - (e) Council Directive 82/471/EEC of 30 June 1982 concerning certain products used in animal nutrition ⁽⁹⁾;

⁽¹⁾ OJ L 170, 3.8.1970, p. 1.

⁽²⁾ OJ L 184, 17.7.1999, p. 23.

⁽³⁾ OJ L 270, 14.12.1970, p. 1. Directive as last amended by Commission Regulation (EC) No 2205/2001 (OJ L 297, 15.11.2001, p. 3).

⁽⁴⁾ OJ L 86, 6.4.1979, p. 30. Directive as last amended by the European Parliament and Council Directive 2002/2/EC (OJ L 63, 6.3.2002, p. 23).

⁽⁵⁾ OJ L 340, 9.12.1976, p. 26. Directive as last amended by Commission Directive 2000/57/EC (OJ L 244, 29.9.2000, p. 76).

⁽⁶⁾ OJ L 221, 7.8.1986, p. 37. Directive as last amended by Commission Directive 2002/23/EC (OJ L 64, 7.3.2002, p. 13).

⁽⁷⁾ OJ L 221, 7.8.1986, p. 43. Directive as last amended by Directive 2002/23/EC.

⁽⁸⁾ OJ L 350, 14.12.1990, p. 71. Directive as last amended by Directive 2002/23/EC.

⁽⁹⁾ OJ L 213, 21.7.1982, p. 8. Directive as last amended by Directive 1999/20/EC (OJ L 80, 25.3.1999, p. 20).

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- (f) Council Directive 93/74/EEC of 13 September 1993 on feeding-stuffs intended for particular nutritional purposes ⁽¹⁾.

Article 2

For the purposes of this Directive:

- (a) ‘feedingstuffs’ shall mean products of vegetable or animal origin, in their natural state, fresh or preserved, and products derived from the industrial processing thereof, and organic or inorganic substances, used singly or in mixtures, whether or not containing additives, for oral animal feeding;
- (b) ‘feed materials’ shall mean various products of vegetable or animal origin, in their natural state, fresh or preserved, and products derived from the industrial processing thereof, and organic or inorganic substances, whether or not containing additives, which are intended for use in oral animal feeding either directly as such or, after processing, in the preparation of compound feedingstuffs or as substrates for premixtures;
- (c) ‘additives’ shall mean additives as defined in Article 2(a) of Council Directive 70/524/EEC;
- (d) ‘premixtures’ shall mean mixtures of additives or mixtures of one or more additives with substances used as carriers, intended for the manufacture of feedingstuffs;
- (e) ‘compound feedingstuffs’ shall mean mixtures of feed materials, whether or not containing additives, which are intended for oral animal feeding as complete or complementary feedingstuffs;
- (f) ‘complementary feedingstuffs’ shall mean mixtures of feedingstuffs which have a high content of certain substances and which, by reason of their composition, are sufficient for a daily ration only if used in combination with other feedingstuffs;
- (g) ‘complete feedingstuffs’ shall mean mixtures of feedingstuffs which, by reason of their composition, are sufficient for a daily ration;
- (h) ‘products intended for animal feed’ shall mean feed materials, premixtures, additives, feedingstuffs and all other products intended for use or used in animal feed;
- (i) ‘daily ration’ shall mean the average total quantity of feedingstuffs, calculated on a moisture content of 12 %, required daily by an animal of a given species, age class and yield, to satisfy all its needs;
- (j) ‘animals’ shall mean animals belonging to species normally fed and kept or consumed by man as well as animals living freely in the wild in cases where they are fed with feedingstuffs;
- (k) ‘putting into circulation’ or ‘circulation’ shall mean the holding of products intended for animal feed for the purposes of sale, including offering for sale, or any other form of transfer, whether free or not, to third parties, and the sale or other forms of transfer themselves;
- (l) ‘undesirable substance’ shall mean any substance or product, with the exception of pathogenic agents, which is present in and/or on the product intended for animal feed and which presents a potential danger to animal or human health or to the environment or could adversely affect livestock production.

⁽¹⁾ OJ L 237, 22.9.1993, p. 23. Directive as last amended by Directive 1999/29/EC (OJ L 115, 4.5.1999, p. 32).



Article 3

1. Products intended for animal feed may enter for use in the Community from third countries, be put into circulation and/or used in the Community only if they are sound, genuine and of merchantable quality and therefore when correctly used do not represent any danger to human health, animal health or to the environment or could adversely affect livestock production.
2. In particular, products intended for animal feed shall be deemed not to be in conformity with paragraph 1 if the level of undesirable substances they contain does not comply with the maximum levels laid down in Annex I.

Article 4

1. Member States shall prescribe that the undesirable substances listed in Annex I may be tolerated in products intended for animal feed only subject to the conditions laid down therein.
2. In order to reduce or eliminate sources of undesirable substances of products intended for animal feed, Member States, in cooperation with economic operators, shall carry out investigations to identify the sources of undesirable substances, in cases where the maximum levels are exceeded and in cases where increased levels of such substances are detected, taking into account background levels. For a uniform approach in cases of increased levels it may be necessary to set action thresholds to trigger such investigations. These may be laid down in Annex II.

Member States shall transmit to the Commission and the other Member States all relevant information and findings of the source and the measures taken to reduce the level or elimination of the undesirable substances. This information shall be transmitted in the frame of the annual report to be transmitted to the Commission according to the provisions of Article 22 of Directive 95/53/EC except in those cases where the information is of immediate relevance for the other Member States. In this latter case, the information shall be transmitted immediately.

Article 5

Member States shall prescribe that products intended for animal feed containing levels of an undesirable substance that exceed the maximum level fixed in Annex I may not be mixed for dilution purposes with the same, or other, products intended for animal feed.

Article 6

In so far as there are no special provisions for complementary feedingstuffs, Member States shall prescribe that complementary feedingstuffs may not, taking into account the proportion prescribed for their use in a daily ration, contain levels of the undesirable substances listed in Annex I that exceed those fixed for complete feedingstuffs.

Article 7

1. Where a Member State has grounds, based on new information or a reassessment of existing information made since the provisions in question were adopted, demonstrating that a maximum level fixed in Annex I or an undesirable substance not listed therein present a danger to animal or human health or to the environment, that Member State may provisionally reduce the existing maximum level, fix a maximum level or prohibit the presence of that undesirable substance in products

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intended for animal feed. It shall immediately inform the other Member States and the Commission thereof, stating the grounds for its decision.

2. An immediate decision shall be taken, in accordance with the procedure laid down in Article 12, as to whether Annexes I and II should be amended.

So long as neither the Council nor the Commission has taken a decision, the Member State may maintain the measures it has implemented.

The Member State must ensure that the decision taken is made public.

Article 8

1. In accordance with the procedure laid down in Article 11, the Commission, in the light of developments in scientific and technical knowledge, shall adapt Annexes I and II.

2. Furthermore, in accordance with the procedure laid down in Article 11, the Commission:

- shall periodically adopt consolidated versions of Annexes I and II incorporating any adaptations made pursuant to paragraph 1,
- may define acceptability criteria for detoxification processes as a complement to the criteria provided for products intended for animal feed which have undergone such processes.

3. Member States shall ensure that measures are taken to guarantee the correct application of any acceptable processes pursuant to paragraph 2 and the conformity of the detoxified products intended for animal feed with the provisions of Annex I.

Article 9

Member States shall ensure that products intended for animal feed which comply with this Directive are not subject to any other restrictions on circulation as regards the presence of undesirable substances other than those provided for in this Directive and Directive 95/53/EC.

Article 10

Provisions that may have an effect upon public or animal health or on the environment shall be adopted after consultation with the appropriate Scientific Committee(s).

Article 11

1. The Commission shall be assisted by the Standing Committee for Feedingstuffs, set up by Article 1 of Decision 70/372/EEC.

2. Where reference is made to this Article, Articles 5 and 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

3. The period laid down in Article 5(6) of Decision 1999/468/EC shall be set at three months.

Article 12

1. The Commission shall be assisted by the Standing Committee for Feedingstuffs, set up by Article 1 of Decision 70/372/EEC.

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2. Where reference is made to this Article, Articles 5 and 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

3. The period laid down in Article 5(6) of Decision 1999/468/EC shall be set at fifteen days.

Article 13

1. The Member States shall apply at least the provisions of this Directive to products intended for animal feed produced in the Community to be exported to third countries.

2. Paragraph 1 shall not affect the right of Member States to authorise re-exportation under the conditions laid down in Article 12 of Regulation (EC) No 178/2002⁽¹⁾. The provisions of Article 20 thereof shall apply *mutatis mutandis*.

Article 14

1. Directive 1999/29/EC is hereby repealed as from 1 August 2003, without prejudice to the obligations of the Member States to comply with the deadlines set out in Part B of Annex III thereto for the transposition of the Directives listed in Part A of that Annex.

2. References to Directive 1999/29/EC shall be construed as references to this Directive and should be read in accordance with the correlation table in Annex III.

Article 15

Member States shall adopt and publish the laws, regulations and administrative provisions necessary to comply with this Directive before 1 May 2003. They shall forthwith inform the Commission thereof.

The measures adopted shall apply as from 1 August 2003.

When Member States adopt these measures, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The procedure for making such reference shall be adopted by Member States.

Member States shall communicate to the Commission the texts of the provisions of national law which they adopt in the field covered by this Directive.

Article 16

This Directive shall enter into force on the day of its publication in the *Official Journal of the European Communities*.

Article 17

The Directive is addressed to the Member States.

⁽¹⁾ Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (OJ L 31, 1.2.2002, p. 1).

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ANNEX I

Undesirable substances	Products intended for animal feed	Maximum content in mg/kg (ppm) relative to a feedingstuff with a moisture content of 12 %
(1)	(2)	(3)
▼M2	1. Arsenic ⁽⁵⁾	Feed materials with the exception of: — meal made from grass, from dried lucerne and from dried clover, and dried sugar beet pulp and dried molasses sugar beet pulp 4 — palm kernel expeller 4 ⁽⁶⁾ — phosphates and calcareous marine algae 10 — calcium carbonate 15 — magnesium oxide 20 — feedingstuffs obtained from the processing of fish or other marine animals 15 ⁽⁶⁾ — seaweed meal and feed materials derived from seaweed 40 ⁽⁶⁾ Complete feedingstuffs with the exception of: — complete feedingstuffs for fish and complete feedingstuffs for fur animals 6 ⁽⁶⁾ Complementary feedingstuffs with the exception of: — mineral feedingstuffs 12
▼M5	2. Lead ⁽¹⁰⁾	Feed materials with the exception of: — green fodder ⁽⁷⁾ 30 ⁽¹¹⁾ — phosphates and calcareous marine algae 15 — calcium carbonate 20 — yeasts 5 Additives belonging to the functional group of compounds of trace elements except — zinc oxide 400 ⁽¹¹⁾ — manganous oxide, iron carbonate, copper carbonate 200 ⁽¹¹⁾ Additives belonging to the functional groups of binders and anti-caking agents except — clinoptilolite of volcanic origin 60 ⁽¹¹⁾ Premixtures 200 ⁽¹¹⁾ Complementary feedingstuffs with the exception of — mineral feedingstuffs 15 Complete feedingstuffs 5

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Undesirable substances	Products intended for animal feed	Maximum content in mg/kg (ppm) relative to a feedingstuff with a moisture content of 12 %
(1)	(2)	(3)
3. Fluorine ⁽¹²⁾	Feed materials with the exception of:	150
	– feedingstuffs of animal origin with the exception of marine crustaceans such as marine krill	500
	– marine crustaceans such as marine krill	3 000
	– phosphates	2 000
	– calcium carbonate	350
	– magnesium oxide	600
	– calcareous marine algae	1 000
	Vermiculite (E 561)	3 000 ⁽¹¹⁾
	Complementary feedingstuffs	
	– containing ≤ 4 % phosphorus	500
	– containing > 4 % phosphorus	125 per 1 % phosphorus
	Complete feedingstuffs with the exception of	150
	– complete feedingstuffs for cattle sheep and goats	
	– – in lactation	30
– – other	50	
– complete feedingstuffs for pigs	100	
– complete feedingstuffs for poultry	350	
– complete feedingstuffs for chicks	250	
4. Mercury	Feed materials with the exception of:	0,1
	— feedingstuffs produced by the processing of fish or other marine animals	0,5
	— calcium carbonate	0,3
	Complete feedingstuffs with the exception of:	0,1
	— complete feedingstuffs for dogs and cats	0,4
	Complementary feedingstuffs except — complementary feedingstuffs for dogs and cats	0,2
5. Nitrites	Fish meal	60 (expressed as sodium nitrite)
	Complete feedingstuffs excluding: — feedingstuffs intended for pets except birds and aquarium fish	15 (expressed as sodium nitrite)
6. Cadmium ⁽¹³⁾	Feed materials of vegetable origin	1
	Feed materials of animal origin	2
	Feed materials of mineral origin except	2
	– phosphates	10

▼M3**▼B****▼M5**

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Undesirable substances	Products intended for animal feed	Maximum content in mg/kg (ppm) relative to a feedingstuff with a moisture content of 12 %
(1)	(2)	(3)
	Additives belonging to the functional group of compounds of trace elements except	10
	– copper oxide, manganous oxide, zinc oxide and manganous sulphate monohydrate	30 ⁽¹⁾
	Additives belonging to the functional groups of binders and anti-caking agents	2
	Premixtures	15 ⁽¹⁾
	Mineral feedingstuffs	
	– containing < 7 % phosphorus	5
	– containing ≥ 7 % phosphorus	0,75 per 1 % phosphorus, with a maximum of 7,5
	Complementary feedingstuffs for pet animals	2
	Other complementary feedingstuffs	0,5
	Complete feedingstuffs for cattle, sheep and goats and feedingstuffs for fish except	1
	– complete feedingstuffs for pets	2
	– complete feedingstuffs for calves, lambs and kids and other complete feedingstuffs	0,5
	All feed materials	0,02
	Complete feedingstuffs for cattle, sheep and goats with the exception of:	0,02
	— complete feedingstuffs for dairy animals	0,005
	— complete feedingstuffs for calves and lambs	0,01
	Complete feedingstuffs for pigs and poultry (except young animals)	0,02
	Other complete feedingstuffs	0,01
	Complementary feedingstuffs for cattle, sheep and goats (except complementary feedingstuffs for dairy animals, calves and lambs)	0,02
	Complementary feedingstuffs for pigs and poultry (except young animals)	0,02
	Other complementary feedingstuffs	0,005
	Feed materials with the exception of:	50
	— linseed	250
	— linseed cakes	350
	— manioc products and almond cakes	100
	Complete feedingstuffs with the exception of:	50
	— complete feedingstuffs for chicks	10

▼M2

7. Aflatoxin B1

▼B

8. Hydrocyanic acid

▼ M2

Undesirable substances	Products intended for animal feed	Maximum content in mg/kg (ppm) relative to a feedingstuff with a moisture content of 12 %
(1)	(2)	(3)
9. Free gossypol	Feed materials with the exception of: — cottonseed — cottonseed cakes and cottonseed meal Complete feedingstuffs with the exception of: — complete feedingstuffs for cattle, sheep and goats — complete feedingstuffs for poultry (except laying hens) and calves — complete feedingstuffs for rabbits and pigs (except piglets)	20 5 000 1 200 20 500 100 60
10. Theobromine	Complete feedingstuffs with the exception of: — complete feedingstuffs for adult cattle	300 700
11. Volatile mustard oil	Feed materials with the exception of: — rapeseed cakes Complete feedingstuffs with the exception of: — complete feedingstuffs for cattle, sheep and goats (except young animals) — complete feedingstuffs for pigs (except piglets) and poultry	100 4 000(expressed as allyl isothiocyanate) 150 (expressed as allyl isothiocyanate) 1 000(expressed as allyl isothiocyanate) 500 (expressed as allyl isothiocyanate)
12. Vinal thioxazolidone (Vinylloxazolidine thione)	Complete feedingstuffs for poultry with the exception of: — complete feedingstuffs for laying hens	1 000 500
13. Rye ergot (<i>Claviceps purpurea</i>)	All feedingstuffs containing unground cereals	1 000
14. Weed seeds and unground and uncrushed fruits containing alkaloids, glucosides or other toxic substances separately or in combination including (a) <i>Lolium temulentum</i> L., (b) <i>Lolium remotum</i> Schrank, (c) <i>Datura stramonium</i> L.	All feedingstuffs	3 000 1 000 1 000 1 000
15. Castor oil plant — <i>Ricinus communis</i> L.	All feedingstuffs	10 (expressed in terms of castor-oil plants husks)
16. <i>Crotalaria</i> spp.	All feedingstuffs	100
17. Aldrin ⁽¹⁵⁾ } 18. Dieldrin ⁽¹⁵⁾ }	All feedingstuffs with the exception of — fats and oils — fish feed	0,01 ⁽¹⁶⁾ 0,1 ⁽¹⁶⁾ 0,02 ⁽¹⁶⁾
19. Camphechlor (toxaphene) — sum of indicator congeners CHB 26, 50 and 62 ⁽⁸⁾		

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Undesirable substances	Products intended for animal feed	Maximum content in mg/kg (ppm) relative to a feedingstuff with a moisture content of 12 %
(1)	(2)	(3)
20. Chlordane (sum of cis- and trans-isomers and of oxychlordane, expressed as chlordane)	All feedingstuffs with the exception of — fats and oils	0,02 0,05
21. DDT (sum of DDT-, TDE- and DDE-isomers, expressed as DDT)	All feedingstuffs with the exception of — fats and oils	0,05 0,5
22. Endosulfan (sum of alpha- and beta-isomers and of endosulfansulphate expressed as endosulfan)	All feedingstuffs with the exception of — maize and maize products derived from the processing thereof — oilseeds and products derived from the processing thereof with the exception of crude vegetable oil — crude vegetable oil — complete feedingstuffs for fish	0,1 0,2 0,5 1,0 0,005
23. Endrin (sum of endrin and of delta-ketoin-drin, expressed as endrin)	All feedingstuffs with the exception of — fats and oils	0,01 0,05
24. Heptachlor (sum of heptachlor and of heptachlorepoxyde, expressed as heptachlor)	All feedingstuffs with the exception of — fats and oils	0,01 0,2
25. Hexachlorobenzene (HCB)	All feedingstuffs with the exception of — fats and oils	0,01 0,2
26. Hexachlorocyclohexane (HCH)		
26.1. alpha-isomers	All feedingstuffs with the exception of — fats and oils	0,02 0,2
26.2. beta-isomers	All feed materials with the exception of — fats and oils All compound feedingstuffs with the exception of — compound feedingstuffs for dairy cattle	0,01 0,1 0,01 0,005
26.3. gamma-isomers	All feedingstuffs with the exception of — fats and oils	0,2 2,0
27a. Dioxins (sum of polychlorinated dibenzo- <i>para</i> -dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) expressed in World Health Organisation (WHO) toxic equivalents, using the WHO-TEFs (toxic equivalency factors, 1997 ⁽²²⁾)	(a) Feed materials of plant origin with the exception of vegetable oils and their by-products (b) Vegetable oils and their by-products (c) Feed materials of mineral origin (d) Animal fat, including milk fat and egg fat (e) Other land animal products including milk and milk products and eggs and egg products (f) Fish oil	0,75 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾ 0,75 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾ 1,0 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾ 2,0 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾ 0,75 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾ 6,0 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾

▼ **M2**

▼B

Undesirable substances	Products intended for animal feed	Maximum content in mg/kg (ppm) relative to a feedingstuff with a moisture content of 12 %
(1)	(2)	(3)
27b. Sum of dioxins and dioxin-like PCBs (sum of polychlorinated dibenzo- <i>para</i> -dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs) and polychlorinated biphenyls (PCBs) expressed in World Health Organisation (WHO) toxic equivalents, using the WHO-TEFs (toxic equivalency factors, 1997 ⁽²²⁾)	(g) Fish, other aquatic animals, their products and by-products with the exception of fish oil and fish protein hydrolysates containing more than 20 % fat ⁽⁴⁾	1,25 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾
	(h) Fish protein hydrolysates containing more than 20 % fat	2,25 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾
	(i) The additives kaolinitic clay, calcium sulphate dihydrate, vermiculite, natrolite-phonolite, synthetic calcium aluminates and clinoptilolite of sedimentary origin belonging to the functional groups of binders and anti-caking agents	0,75 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾
	(j) Additives belonging to the functional group of compounds of trace elements	1,0 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾
	(k) Premixtures	1,0 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾
	(l) Compound feedingstuffs, with the exception of feed for fur animals, pet foods and feed for fish	0,75 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾
	(m) Feed for fish. Pet foods	2,25 ng WHO-PCDD/F-TEQ/kg ⁽²⁾ ⁽³⁾
	(a) Feed materials of plant origin with the exception of vegetable oils and their by-products	1,25 ng WHO-PCDD/F-PCB-TEQ/kg ⁽²⁾
	(b) Vegetable oils and their by-products	1,5 ng WHO-PCDD/F-PCB-TEQ/kg ⁽²⁾
	(c) Feed materials of mineral origin	1,5 ng WHO-PCDD/F-PCB-TEQ/kg ⁽²⁾
	(d) Animal fat, including milk fat and egg fat	3,0 ng WHO-PCDD/F-PCB-TEQ/kg ⁽²⁾
	(e) Other land animal products including milk and milk products and eggs and egg products	1,25 ng WHO-PCDD/F-PCB-TEQ/kg ⁽²⁾
	(f) Fish oil	24,0 ng WHO-PCDD/F-PCB-TEQ/kg ⁽²⁾
	(g) Fish, other aquatic animals, their products and by-products with the exception of fish oil and fish protein hydrolysates containing more than 20 % fat ⁽⁴⁾	4,5 ng WHO-PCDD/F-PCB-TEQ/kg ⁽²⁾
	(h) Fish protein hydrolysates containing more than 20 % fat	11,0 ng WHO-PCDD/F-PCB-TEQ/kg ⁽²⁾
	(i) Additives belonging to the functional groups of binders and anti-caking agents	1,5 ng WHO-PCDD/F-PCB-TEQ/kg ⁽²⁾
	(j) Additives belonging to the functional group of compounds of trace elements	1,5 ng WHO-PCDD/F-PCB-TEQ/kg ⁽²⁾
	(k) Premixtures	1,5 ng WHO-PCDD/F-PCB-TEQ/kg ⁽²⁾

▼ **B**

Undesirable substances	Products intended for animal feed	Maximum content in mg/kg (ppm) relative to a feedingstuff with a moisture content of 12 %
(1)	(2)	(3)
<p>▼ M2</p> <p>28. Apricots — <i>Prunus armeniaca</i> L.</p> <p>29. Bitter almond — <i>Prunus dulcis</i> (Mill.) D. A. Webb var. <i>amara</i> (DC.) Focke (= <i>Prunus amygdalus Batsch</i> var. <i>amara</i> (DC.) Focke)</p> <p>30. Unhusked beech mast — <i>Fagus silvatica</i> L.</p> <p>31. Camelina — <i>Camelina sativa</i> (L.) Crantz</p> <p>32. <i>Mowrah</i>, <i>Bassia</i>, <i>Madhuca</i> — <i>Madhuca longifolia</i> (L.) Macbr. (= <i>Bassia longifolia</i> L. = <i>Illiped malabrorum</i> Engl.) <i>Madhuca indica</i> Gmelin (= <i>Bassia latifolia</i> Roxb.) = <i>Illipe latifolia</i> (Roscb.) F. Mueller</p> <p>33. Purghera — <i>Jatropha curcas</i> L.</p> <p>34. Croton — <i>Croton tiglium</i> L.</p> <p>35. Indian mustard — <i>Brassica juncea</i> (L.) Czern. And Coss. ssp. <i>intergrifolia</i> (West.) Thell.</p> <p>36. Sareptian mustard — <i>Brassica juncea</i> (L.) Czern. And Coss. ssp. <i>juncea</i></p> <p>37. Chinese mustard — <i>Brassica juncea</i> (L.) Czern. And Coss. ssp. <i>juncea</i> var. <i>lutea</i> Batalin</p> <p>38. Black mustard — <i>Brassica nigra</i> (L.) Koch</p> <p>39. Ethiopian mustard — <i>Brassica carinata</i> A. Braun</p>	<p>(l) Compound feedingstuffs, with the exception of feed for fur animals, pet foods and feed for fish</p> <p>(m) Feed for fish. Pet foods</p> <p style="text-align: center;">} All feedingstuffs</p>	<p>1,5 ng WHO-PCDD/ F-PCB-TEQ/kg ⁽²⁾</p> <p>7,0 ng WHO-PCDD/ F-PCB-TEQ/kg ⁽²⁾</p> <p style="text-align: center;">} Seeds and fruit of the plant species listed opposite as well as their processed derivatives may only be present in feedingstuffs in trace amounts not quantitatively determinable</p>

⁽¹⁸⁾ Member States may also prescribe a maximum fluorine content of 1,25 % of the phosphate content.

⁽¹⁹⁾ Fluorine content per 1 % phosphorus.

⁽²²⁾ WHO-TEFs for human risk assessment based on the conclusions of the World Health Organisation meeting in Stockholm, Sweden, 15-18 June 1997 (Van den Berg et al., (1998) Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, and PCDFs for Humans and for Wildlife. Environmental Health Perspectives, 106(12), 775).



Undesirable substances	Products intended for animal feed	Maximum content in mg/kg (ppm) relative to a feedingstuff with a moisture content of 12 %
(1)	(2)	(3)

Congener	TEF value	Congener	TEF value
Dibenzo-p-dioxins (PCDDs)			
2,3,7,8-TCDD	1	"Dioxin-like" PCBs	
1,2,3,7,8-PeCDD	1	Non-ortho PCBs + Mono-ortho PCBs	
1,2,3,4,7,8-HxCDD	0,1	Non-ortho PCBs	
1,2,3,6,7,8-HxCDD	0,1	PCB 77	0,0001
1,2,3,7,8,9-HxCDD	0,1	PCB 81	0,0001
1,2,3,4,6,7,8-HpCDD	0,01	PCB 126	0,1
OCDD	0,0001	PCB 169	0,01
Dibenzofurans (PCDFs)			
2,3,7,8-TCDF	0,1	Mono-ortho PCBs	
1,2,3,7,8-PeCDF	0,05	PCB 105	0,0001
2,3,4,7,8-PeCDF	0,5	PCB 114	0,0005
1,2,3,4,7,8-HxCDF	0,1	PCB 118	0,0001
1,2,3,6,7,8-HxCDF	0,1	PCB 123	0,0001
1,2,3,7,8,9-HxCDF	0,1	PCB 156	0,0005
2,3,4,6,7,8-HxCDF	0,1	PCB 157	0,0005
1,2,3,4,6,7,8-HpCDF	0,01	PCB 167	0,00001
1,2,3,4,7,8,9-HpCDF	0,01	PCB 189	0,0001
OCDF	0,0001		

Abbreviations used: "T" = tetra; "Pe" = penta; "Hx" = hexa; "Hp" = hepta; "O" = octa; "CDD" = chlorodibenzodioxin; "CDF" = chlorodibenzofuran; "CB" = chlorobiphenyl.

- (2) 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.
- (3) The separate maximum level for dioxins (PCDD/F) remains applicable for a temporary period. The products intended for animal feed mentioned in point 27a have to comply both with the maximum levels for dioxins and with the maximum levels for the sum of dioxins and dioxin-like PCBs during that temporary period.
- (4) Fresh fish directly delivered and used without intermediate processing for the production of feed for fur animals is not subject to the maximum levels, while maximum levels of 4,0 ng WHO-PCDD/F-TEQ/kg product and 8,0 ng WHO-PCDD/F-PCB-TEQ/kg product are applicable to fresh fish used for the direct feeding of pet animals, zoo and circus animals. The products, 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.
- (5) The maximum levels refer to total arsenic.
- (6) Upon request of the competent authorities, the responsible operator must perform an analysis to demonstrate that the content of inorganic arsenic is lower than 2 ppm. This analysis is of particular importance for the seaweed species *Hizikia fusiforme*.
- (7) Green fodder includes products intended for animal feed such as hay, silage, fresh grass, etc ...
- (8) 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-octachlorobornane,
 — 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.
- (9) The levels shall be reviewed by 31 December 2007 with the aim of reducing the maximum levels.
- (10) Maximum levels refer 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.
- (11) The levels shall be reviewed by 31 December 2007 with the aim of reducing the maximum levels.
- (12) Maximum levels refer to an analytical determination of fluorine, whereby extraction is performed with hydrochloric acid 1 N for 20 minutes at ambient temperature. Equivalent extraction procedures can be applied for which it can be demonstrated that the used extraction procedure has an equal extraction efficiency.
- (13) Maximum levels refer 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.
- (15) Singly or combined expressed as dieldrin.
- (16) Maximum level for aldrin and dieldrin, singly or combined, expressed as dieldrin.
- (8) 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-octachlorobornane,
 — 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.
- (9) The levels shall be reviewed by 31 December 2007 with the aim of reducing the maximum levels.



ANNEX II

Undesirable substances	Products intended for animal feed	Action threshold relative to a feedingstuff with a moisture content of 12 %	Comments and additional information (e.g. nature of investigations to be performed)
(1)	(2)	(3)	(4)
1. Dioxins (sum of polychlorinated dibenzo- <i>para</i> -dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs) expressed in World Health Organisation (WHO) toxic equivalents, using the WHO-TEFs (toxic equivalency factors, 1997 ⁽¹⁷⁾)	(a) Feed materials of plant origin with the exception of vegetable oils and their by-products	0,5 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(b) Vegetable oils and their by-products	0,5 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(c) Feed materials of mineral origin	0,5 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(d) Animal fat, including milk fat and egg fat	1,0 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(e) Other land animal products including milk and milk products and eggs and egg products	0,5 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(f) Fish oil	5,0 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	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 to 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., should be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in these materials for animal nutrition.
	(g) Fish, other aquatic animals, their products and by-products with the exception of fish oil and fish protein hydrolysates containing more than 20 % fat	1,0 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	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 to 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., must be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in these materials for animal nutrition.
	(h) Fish protein hydrolysates containing more than 20 % fat	1,75 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	In many cases it might not be necessary to perform an investigation into the source of contamination as the background level in

▼M6

Undesirable substances	Products intended for animal feed	Action threshold relative to a feedingstuff with a moisture content of 12 %	Comments and additional information (e.g. nature of investigations to be performed)
			some areas is close to 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., must be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in these materials for animal nutrition.
	(i) Additives belonging to the functional groups of binders and anti-caking agents	0,5 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(j) Additives belonging to the functional group of compounds of trace elements	0,5 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(k) Premixtures	0,5 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(l) Compound feedingstuffs, with the exception of feedingstuffs for fur animals, pet foods and feedingstuffs for fish	0,5 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(m) Feedingstuffs for fish. Pet foods	1,75 ng WHO-PCDD/F-TEQ/kg ⁽¹⁾ ⁽²⁾	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 to 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., must be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in these materials for animal nutrition.
2. Dioxin like PCBs (sum of polychlorinated biphenyls (PCBs) expressed in World Health Organisation (WHO) toxic equivalents, using the WHO-TEFs (toxic equivalency factors, 1997 ⁽¹⁷⁾)	(a) Feed materials of plant origin with the exception of vegetable oils and their by-products	0,35 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(b) Vegetable oils and their by-products	0,5 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(c) Feed materials of mineral origin	0,35 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.

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Undesirable substances	Products intended for animal feed	Action threshold relative to a feedingstuff with a moisture content of 12 %	Comments and additional information (e.g. nature of investigations to be performed)
	(d) Animal fat, including milk fat and egg fat	0,75 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(e) Other land animal products including milk and milk products and eggs and egg products	0,35 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(f) Fish oil	14,0 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	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 to 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., must be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in these materials for animal nutrition.
	(g) Fish, other aquatic animals, their products and by-products with the exception of fish oil and fish protein hydrolysates containing more than 20 % fat	2,5 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	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 to 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., must be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in these materials for animal nutrition.
	(h) Fish protein hydrolysates containing more than 20 % fat	7,0 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	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 to 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., must be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in these materials for animal nutrition.
	(i) Additives belonging to the functional groups of binders and anti-caking agents	0,5 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(j) Additives belonging to the functional group of compounds of trace elements	0,35 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to

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Undesirable substances	Products intended for animal feed	Action threshold relative to a feedingstuff with a moisture content of 12 %	Comments and additional information (e.g. nature of investigations to be performed)
			reduce or eliminate source of contamination.
	(k) Premixtures	0,35 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(l) Compound feedingstuffs, with the exception of feedingstuffs for fur animals, pet foods and feedingstuffs for fish	0,5 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	Identification of source of contamination. Once source is identified, take appropriate measures, where possible, to reduce or eliminate source of contamination.
	(m) Feedingstuffs for fish. Pet foods	3,5 ng WHO-PCB-TEQ/kg ⁽¹⁾ ⁽²⁾	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 to 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., must be recorded with a view to future measures to manage the presence of dioxins and dioxin-like compounds in these materials for animal nutrition.

- ⁽¹⁷⁾ WHO-TEFs for human risk assessment based on the conclusions of the World Health Organisation meeting in Stockholm, Sweden, 15-18 June 1997 (Van den Berg et al., (1998) Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and for Wildlife. Environmental Health Perspectives, 106(12), 775).

Congener	TEF value	Congener	TEF value
Dibenzo-p-dioxins (PCDDs)		"Dioxin-like" PCBs	
2,3,7,8-TCDD	1	Non-ortho PCBs + Mono-ortho PCBs	
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	0,0001
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	0,01
OCDD	0,0001	Mono-ortho PCBs	
Dibenzofurans (PCDFs)		PCB 105	0,0001
2,3,7,8-TCDF	0,1	PCB 114	0,0005
1,2,3,7,8-PeCDF	0,05	PCB 118	0,0001
2,3,4,7,8-PeCDF	0,5	PCB 123	0,0001
1,2,3,4,7,8-HxCDF	0,1	PCB 156	0,0005
1,2,3,6,7,8-HxCDF	0,1	PCB 157	0,0005
1,2,3,7,8,9-HxCDF	0,1	PCB 167	0,00001
2,3,4,6,7,8-HxCDF	0,1	PCB 189	0,0001
1,2,3,4,6,7,8-HpCDF	0,01		
1,2,3,4,7,8,9-HpCDF	0,01		
OCDF	0,0001		

Abbreviations used: "T" = tetra; "Pe" = penta; "Hx" = hexa; "Hp" = hepta; "O" = octa; "CDD" = chlorodibenzodioxin; "CDF" = chlorodibenzofuran; "CB" = chlorobiphenyl.

- ⁽¹⁾ 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.
- ⁽²⁾ The Commission will review these action levels by 31 December 2008 at the latest at the same time as it reviews the maximum levels for the sum of dioxins and dioxin-like PCBs.



ANNEX III

CORRELATION TABLE

Directive 1999/29/EC	This Directive
Article 1	Article 1
Article 2(a)	Article 2(a)
Article 2(b)	Article 2(b)
Article 2(c)	Article 2(g)
Article 2(d)	Article 2(f)
Article 2(e)	Article 2(e)
Article 2(f)	Article 2(i)
Article 2(g)	Article 2(j)
Article 2(h)	—
—	Article 2(c)
—	Article 2(d)
—	Article 2(h)
—	Article 2(k)
—	Article 2(l)
Article 3	Article 3
Article 4(1)	Article 4(1)
Article 4(2)	—
—	Article 4(2)
Article 5	—
Article 6	—
Article 7	Article 5
Article 8	Article 6
Article 9	Article 7
Article 10	Article 8
Article 11	Article 9
Article 12	—
—	Article 10
Article 13	Article 11
Article 14	Article 12
Article 15	Article 13
Article 16	—
—	Article 14
—	Article 15
Article 17	Article 16
Article 18	Article 17
Annex I	Annex I
Annex II	—
Annex III	—
Annex IV	Annex II