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► **B** **COUNCIL DIRECTIVE**  
**of 12 June 1986**  
**on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture**  
 (86/278/EEC)  
 (OJ L 181, 4.7.1986, p. 6)

Amended by:

		Official Journal		
		No	page	date
► <b><u>M1</u></b>	Council Directive 91/692/EEC of 23 December 1991	L 377	48	31.12.1991
► <b><u>M2</u></b>	Council Regulation (EC) No 807/2003 of 14 April 2003	L 122	36	16.5.2003
► <b><u>M3</u></b>	Regulation (EC) No 219/2009 of the European Parliament and of the Council of 11 March 2009	L 87	109	31.3.2009
► <b><u>M4</u></b>	Decision (EU) 2018/853 of the European Parliament and of the Council of 30 May 2018	L 150	155	14.6.2018
► <b><u>M5</u></b>	Regulation (EU) 2019/1010 of the European Parliament and of the Council of 5 June 2019	L 170	115	25.6.2019

Amended by:

► <b><u>A1</u></b>	Act of Accession of Austria, Sweden and Finland	C 241	21	29.8.1994
	(adapted by Council Decision 95/1/EC, Euratom, ECSC)	L 1	1	1.1.1995

**▼B****COUNCIL DIRECTIVE****of 12 June 1986****on the protection of the environment, and in particular of the soil,  
when sewage sludge is used in agriculture**

(86/278/EEC)

*Article 1*

The purpose of this Directive is to regulate the use of sewage sludge in agriculture in such a way as to prevent harmful effects on soil, vegetation, animals and man, thereby encouraging the correct use of such sewage sludge.

*Article 2*

For the purposes of this Directive:

(a) 'sludge' means:

- (i) residual sludge from sewage plants treating domestic or urban waste waters and from other sewage plants treating waste waters of a composition similar to domestic and urban waste waters;
- (ii) residual sludge from septic tanks and other similar installations for the treatment of sewage;
- (iii) residual sludge from sewage plants other than those referred to in (i) and (ii);

(b) 'treated sludge' means:

sludge which has undergone biological, chemical or heat treatment, long-term storage or any other appropriate process so as significantly to reduce its fermentability and the health hazards resulting from its use;

(c) 'agriculture' means:

the growing of all types of commercial food crops, including for stock-rearing purposes;

(d) 'use' means:

the spreading of sludge on the soil or any other application of sludge on and in the soil;

**▼M5**

- (e) 'spatial data services' means spatial data services as defined in point 4 of Article 3 of Directive 2007/2/EC of the European Parliament and of the Council<sup>(1)</sup>;
- (f) 'spatial data set' means a spatial data set as defined in point 3 of Article 3 of Directive 2007/2/EC.

<sup>(1)</sup> Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) (OJ L 108, 25.4.2007, p. 1).

**▼ B***Article 3*

1. The sludge referred to in Article 2 (a) (i) may only be used in agriculture in accordance with this Directive.
2. Without prejudice to Directives 75/442/EEC and 78/319/EEC:
  - the sludge referred to in Article 2 (a) (ii) may be used in agriculture subject to any conditions that the Member State concerned may deem necessary for the protection of human health and the environment,
  - the sludge referred to in Article 2 (a) (iii) may be used in agriculture only if its use is regulated by the Member State concerned.

*Article 4*

Values for concentrations of heavy metals in soil to which sludge is applied, concentrations of heavy metals in sludge and the maximum annual quantities of such heavy metals which may be introduced into soil intended for agriculture are given in Annexes I A, I B and I C.

*Article 5*

Without prejudice to Article 12:

1. Member States shall prohibit the use of sludge where the concentration of one or more heavy metals in the soil exceeds the limit values which they lay down in accordance with Annex I A and shall take the necessary steps to ensure that those limit values are not exceeded as a result of the use of sludge.
2. Member States shall regulate the use of sludge in such a way that the accumulation of heavy metals in the soil does not lead to the limit values referred to in paragraph 1 being exceeded. To achieve this, they shall apply one or other of the procedures provided for in (a) and (b) below:
  - (a) Member States shall lay down the maximum quantities of sludge expressed in tonnes of dry matter which may be applied to the soil per unit of area per year while observing the limit values for heavy metal concentration in sludge which they lay down in accordance with Annex I B; or
  - (b) Member States shall ensure observance of the limit values for the quantities of metals introduced into the soil per unit of area and unit of time as set out in Annex I C.

*Article 6*

Without prejudice to Article 7:

- (a) sludge shall be treated before being used in agriculture. Member States may nevertheless authorize, under conditions to be laid down by them, the use of untreated sludge if it is injected or worked into the soil;
- (b) sewage-sludge producers shall regularly provide users with all the information referred to in Annex II A.

**▼ B***Article 7*

Member States shall prohibit the use of sludge or the supply of sludge for use on:

- (a) grassland or forage crops if the grassland is to be grazed or the forage crops to be harvested before a certain period has elapsed. This period, which shall be set by the Member States taking particular account of their geographical and climatic situation, shall under no circumstances be less than three weeks;
- (b) soil in which fruit and vegetable crops are growing, with the exception of fruit trees;
- (c) ground intended for the cultivation of fruit and vegetable crops which are normally in direct contact with the soil and normally eaten raw, for a period of 10 months preceding the harvest of the crops and during the harvest itself.

*Article 8*

The following rules shall be observed when using sludge:

- the sludge shall be used in such a way that account is taken of the nutrient needs of the plants and that the quality of the soil and of the surface and ground water is not impaired,
- where sludge is used on soils of which the pH is below 6, Member States shall take into account the increased mobility and availability to the crop of heavy metals and shall, if necessary, reduce the limit values they have laid down in accordance with Annex I A.

*Article 9*

Sludge and soil on which it is used shall be analyzed as outlined in Annexes II A and II B.

The reference methods for sampling and analysis are indicated in Annex II C.

**▼ M5***Article 10*

1. Member States shall ensure that up-to-date records are kept, and that those records register:

- (a) the quantities of sludge produced and the quantities supplied for use in agriculture;
- (b) the composition and properties of the sludge in relation to the parameters referred to in Annex II A;
- (c) the type of treatment carried out, as defined in point (b) of Article 2;
- (d) the names and addresses of the recipients of the sludge and the place where the sludge is to be used;
- (e) any other information with regard to the transposition and implementation of this Directive provided by the Member States to the Commission pursuant to Article 17.

**▼M5**

Spatial data services shall be used to present the spatial data sets included in the information registered in those records.

2. The records referred to in paragraph 1 of this Article shall be made available and easily accessible to the public for each calendar year, within eight months of the end of the relevant calendar year, in a consolidated format as laid down in the Annex to Commission Decision 94/741/EC<sup>(1)</sup> or another consolidated format provided pursuant to Article 17 of this Directive.

Member States shall submit to the Commission, by electronic means, the information referred to in the first subparagraph of this paragraph.

3. Information on the methods of treatment and the results of the analyses shall be released to the competent authorities.

**▼B***Article 11*

Member States may exempt from Article 6 (b) and Article 10 (1) (b), (c) and (d) and paragraph 2, sludge from sewage treatment plants with a treatment capacity below 300 kg BOD<sub>5</sub> per day, corresponding to 5 000 person equivalents, which are designed primarily for the treatment of domestic waste water.

*Article 12*

Where conditions so demand, Member States may take more stringent measures than those provided for in this Directive.

Any decision of this nature shall be communicated to the Commission in accordance with existing agreements.

**▼M4***Article 13*

The Commission is empowered to adopt delegated acts in accordance with Article 15a to amend the Annexes in order to adapt them to technical and scientific progress.

The first paragraph shall not apply to the parameters and values listed in Annexes I A, I B and I C, any factors likely to affect the evaluation of those values, and the parameters for analysis referred to in Annexes II A and II B.

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<sup>(1)</sup> Commission Decision 94/741/EC of 24 October 1994 concerning questionnaires for Member States reports on the implementation of certain Directives in the waste sector (implementation of Council Directive 91/692/EEC) (OJ L 296, 17.11.1994, p. 42).

▼ M4*Article 15*

1. The Commission shall be assisted by the committee established by Article 39 of Directive 2008/98/EC of the European Parliament and of the Council <sup>(1)</sup>. That committee shall be a committee within the meaning of Regulation (EU) No 182/2011 of the European Parliament and of the Council <sup>(2)</sup>.

2. Where reference is made to this paragraph, Article 5 of Regulation (EU) No 182/2011 shall apply.

*Article 15a*

1. The power to adopt delegated acts is conferred on the Commission subject to the conditions laid down in this Article.

2. The power to adopt delegated acts referred to in Article 13 shall be conferred on the Commission for a period of five years from 4 July 2018. The Commission shall draw up a report in respect of the delegation of power not later than nine months before the end of the five-year period. The report shall be submitted to the European Parliament and Council. The delegation of power shall be tacitly extended for periods of an identical duration, unless the European Parliament or the Council opposes such extension not later than three months before the end of each period.

3. The delegation of power referred to in Article 13 may be revoked at any time by the European Parliament or by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the *Official Journal of the European Union* or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.

4. Before adopting a delegated act, the Commission shall consult experts designated by each Member State in accordance with the principles laid down in the Interinstitutional Agreement of 13 April 2016 on Better Law-Making <sup>(3)</sup>.

5. As soon as it adopts a delegated act, the Commission shall notify it simultaneously to the European Parliament and to the Council.

6. A delegated act adopted pursuant to Article 13 shall enter into force only if no objection has been expressed either by the European Parliament or the Council within a period of two months of notification of that act to the European Parliament and the Council or if, before the expiry of that period, the European Parliament and the Council have both informed the Commission that they will not object. That period shall be extended by two months at the initiative of the European Parliament or of the Council.

<sup>(1)</sup> Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3).

<sup>(2)</sup> Regulation (EU) No 182/2011 of the European Parliament and of the Council of 16 February 2011 laying down the rules and general principles concerning mechanisms for control by Member States of the Commission's exercise of implementing powers (OJ L 55, 28.2.2011, p. 13).

<sup>(3)</sup> OJ L 123, 12.5.2016, p. 1.

**▼ B***Article 16*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive within three years of its notification.

They shall forthwith inform the Commission thereof.

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

**▼ M5***Article 17*

The Commission is empowered to lay down, by means of implementing acts, a format in accordance with which Member States are to provide information on the implementation of this Directive as required by Article 10. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 15(2).

The Commission services shall publish a Union-wide overview including maps on the basis of the data made available by the Member States pursuant to Article 10 and this Article.

**▼ B***Article 18*

This Directive is addressed to the Member States.

**▼ B***ANNEX I A***LIMIT VALUES FOR CONCENTRATIONS OF HEAVY METALS IN SOIL****(mg/kg of dry matter in a representative sample, as defined in Annex II C, of soil with a pH of 6 to 7)**

Parameters	Limit values <sup>(1)</sup>
Cadmium	1 to 3
Copper <sup>(2)</sup>	50 to 140
Nickel <sup>(2)</sup>	30 to 75
Lead	50 to 300
Zinc <sup>(2)</sup>	150 to 300
Mercury	1 to 1,5
Chromium <sup>(3)</sup>	—

<sup>(1)</sup> Member States may permit the limit values they fix to be exceeded in the case of the use of sludge on land which at the time of notification of this Directive is dedicated to the disposal of sludge but on which commercial food crops are being grown exclusively for animal consumption. Member States must inform the Commission of the number and type of sites concerned. They must also seek to ensure that there is no resulting hazard to human health or the environment.

<sup>(2)</sup> Member States may permit the limit values they fix to be exceeded in respect of these parameters on soil with a pH consistently higher than 7. The maximum authorized concentrations of these heavy metals must in no case exceed those values by more than 50 %. Member States must also seek to ensure that there is no resulting hazard to human health or the environment and in particular to ground water.

<sup>(3)</sup> It is not possible at this stage to fix limit values for chromium. The Council will fix these limit values later on the basis of proposals to be submitted by the Commission, within one year following notification of this Directive.



**▼B***ANNEX I B***LIMIT VALUES FOR HEAVY-METAL CONCENTRATIONS IN  
SLUDGE FOR USE IN AGRICULTURE****(mg/kg of dry matter)**

Parameters	Limit values
Cadmium	20 to 40
Copper	1 000 to 1 750
Nickel	300 to 400
Lead	750 to 1 200
Zinc	2 500 to 4 000
Mercury	16 to 25
Chromium <sup>(1)</sup>	—

<sup>(1)</sup> It is not possible at this stage to fix limit values for chromium. The Council will fix these limit values later on the basis of proposals to be submitted by the Commission within one year following notification of this Directive.

**▼B***ANNEX I C***LIMIT VALUES FOR AMOUNTS OF HEAVY METALS WHICH MAY BE ADDED ANNUALLY TO AGRICULTURAL LAND, BASED ON A 10-YEAR AVERAGE****(kg/ha/yr)**

Parameters	Limit values <sup>(1)</sup>
Cadmium	0,15
Copper	12
Nickel	3
Lead	15
Zinc	30
Mercury	0,1
Chromium <sup>(2)</sup>	—

<sup>(1)</sup> Member States may permit these limit values to be exceeded in the case of the use of sludge on land which at the time of notification of this Directive is dedicated to the disposal of sludge but on which commercial food crops are being grown exclusively for animal consumption. Member States must inform the Commission of the number and type of sites concerned. They must also ensure that there is no resulting hazard to human health or the environment.

<sup>(2)</sup> It is not possible at this stage to fix limit values for chromium. The Council will fix these limit values later on the basis of proposals to be submitted by the Commission within one year following notification of this Directive.

*ANNEX II A***SLUDGE ANALYSIS**

1. As a rule, sludge must be analyzed at least every six months. Where changes occur in the characteristics of the waste water being treated, the frequency of the analyses must be increased. If the results of the analyses do not vary significantly over a full year, the sludge must be analyzed at least every 12 months.
2. In the case of sludge from the treatment plants referred to in Article 11, if a sludge analysis has not been carried out in the 12 months preceding the implementation, in each Member State, of this Directive, an analysis must be carried out within 12 months of such implementation, or, where appropriate, within six months of the decision authorizing the use in agriculture of sludge from such a plant. Member States shall decide on the frequency of further analyses on the basis of the results of the initial analysis, any changes in the nature of treated waste water and any other relevant factors.
3. Subject to the provisions of paragraph 4, analysis should cover the following parameters:
  - dry matter, organic matter,
  - pH,
  - nitrogen and phosphorus,
  - cadmium, copper, nickel, lead, zinc, mercury, chromium.
4. In the case of copper, zinc and chromium, where it has been shown, to the satisfaction of the competent authority of the Member State concerned that they are either not present at all or present only in negligible quantities in the waste water treated by the sewage plant, Member States shall decide on the frequency of the analyses to be carried out.

**▼B***ANNEX II B***SOIL ANALYSIS**

1. Whenever sludge other than sludge from the treatment plants referred to in Article 11 is used, Member States must first ensure that the heavy metal content of the soil does not exceed the limit values laid down in accordance with Annex IA. For this purpose, Member States shall decide what analyses to carry out, taking account of available scientific data on soil characteristics and homogeneity.
2. Member States shall decide on the frequency of further analyses, taking account of the metal content of the soil prior to the use of sludge, the quantity and composition of the sludge used and any other relevant factors.
3. Analysis should cover the following parameters:
  - pH,
  - cadmium, copper, nickel, lead, zinc, mercury and chromium.

*ANNEX II C***SAMPLING AND ANALYSIS METHODS****1. Soil sampling**

The representative soil samples for analysis should normally be made up by mixing together 25 core samples taken over an area not exceeding 5 hectares which is farmed for the same purpose.

The samples must be taken to a depth of 25 cm unless the depth of the surface soil is less than that value; however, the sampling depth in the latter case must not be less than 10 cm.

**2. Sludge sampling**

Sludge must be sampled after processing, but before delivery to the user, and should be representative of the sludge production.

**3. Methods of analysis**

Analysis for heavy metals must be carried out following strong acid digestion. The reference method of analysis must be that of atomic absorption spectrometry and the limit of detection for each metal should be no greater than 10 % of the appropriate limit value.