

This document is meant purely as a documentation tool and the institutions do not assume any liability for its contents

► **B**

COUNCIL DIRECTIVE 1999/31/EC

of 26 April 1999

on the landfill of waste

(OJ L 182, 16.7.1999, p. 1)

Amended by:

		Official Journal		
		No	page	date
► <u>M1</u>	Regulation (EC) No 1882/2003 of the European Parliament and of the Council of 29 September 2003	L 284	1	31.10.2003
► <u>M2</u>	Regulation (EC) No 1137/2008 of the European Parliament and of the Council of 22 October 2008	L 311	1	21.11.2008
► <u>M3</u>	Council Directive 2011/97/EU of 5 December 2011	L 328	49	10.12.2011



COUNCIL DIRECTIVE 1999/31/EC
of 26 April 1999
on the landfill of waste

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 130s(1) thereof,

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

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

Acting in accordance with the procedure laid down in Article 189c of the Treaty ⁽³⁾,

- (1) Whereas the Council resolution of 7 May 1990 ⁽⁴⁾ on waste policy welcomes and supports the Community strategy document and invites the Commission to propose criteria and standards for the disposal of waste by landfill;
- (2) Whereas the Council resolution of 9 December 1996 on waste policy considers that, in the future, only safe and controlled landfill activities should be carried out throughout the Community;
- (3) Whereas the prevention, recycling and recovery of waste should be encouraged as should the use of recovered materials and energy so as to safeguard natural resources and obviate wasteful use of land;
- (4) Whereas further consideration should be given to the issues of incineration of municipal and non-hazardous waste, composting, biomethanisation, and the processing of dredging sludges;
- (5) Whereas under the polluter pays principle it is necessary, *inter alia*, to take into account any damage to the environment produced by a landfill;
- (6) Whereas, like any other type of waste treatment, landfill should be adequately monitored and managed to prevent or reduce potential adverse effects on the environment and risks to human health;
- (7) Whereas it is necessary to take appropriate measures to avoid the abandonment, dumping or uncontrolled disposal of waste; whereas, accordingly, it must be possible to monitor landfill sites with respect to the substances contained in the waste deposited there, whereas such substances should, as far as possible, react only in foreseeable ways;

⁽¹⁾ OJ C 156, 24.5.1997, p. 10.

⁽²⁾ OJ C 355, 21.11.1997, p. 4.

⁽³⁾ Opinion of the European Parliament of 19 February 1998 (OJ C 80, 16.3.1998, p. 196), Council common position of 4 June 1998 (OJ C 333, 30.10.1998, p. 15) and Decision of the European Parliament of 3 February 1999 (OJ C 150, 28.5.1999, p. 78)

⁽⁴⁾ OJ C 122, 18.5.1990, p. 2.

▼B

- (8) Whereas both the quantity and hazardous nature of waste intended for landfill should be reduced where appropriate; whereas the handling of waste should be facilitated and its recovery enhanced; whereas the use of treatment processes should therefore be encouraged to ensure that landfill is compatible with the objectives of this Directive; whereas sorting is included in the definition of treatment;
- (9) Whereas Member States should be able to apply the principles of proximity and self-sufficiency for the elimination of their waste at Community and national level, in accordance with Council Directive 75/442/EEC of 15 July 1975 on waste ⁽¹⁾ whereas the objectives of this Directive must be pursued and clarified through the establishment of an adequate, integrated network of disposal plants based on a high level of environmental protection;
- (10) Whereas disparities between technical standards for the disposal of waste by landfill and the lower costs associated with it might give rise to increased disposal of waste in facilities with low standards of environmental protection and thus create a potentially serious threat to the environment, owing to transport of waste over unnecessarily long distances as well as to inappropriate disposal practices;
- (11) Whereas it is therefore necessary to lay down technical standards for the landfill of waste at Community level in order to protect, preserve and improve the quality of the environment in the Community;
- (12) Whereas it is necessary to indicate clearly the requirements with which landfill sites must comply as regards location, conditioning, management, control, closure and preventive and protective measures to be taken against any threat to the environment in the short as well as in the long-term perspective, and more especially against the pollution of groundwater by leachate infiltration into the soil;
- (13) Whereas in view of the foregoing it is necessary to define clearly the classes of landfill to be considered and the types of waste to be accepted in the various classes of landfill;
- (14) Whereas sites for temporary storage of waste should comply with the relevant requirements of Directive 75/442/EEC;
- (15) Whereas the recovery, in accordance with Directive 75/442/EEC, of inert or non-hazardous waste which is suitable, through their use in redevelopment/restoration and filling-in work, or for construction purposes may not constitute a landfilling activity;
- (16) Whereas measures should be taken to reduce the production of methane gas from landfills, *inter alia*, in order to reduce global warming, through the reduction of the landfill of biodegradable waste and the requirements to introduce landfill gas control;

⁽¹⁾ OJ L 194, 25.7.1975, p. 39. Directive as last amended by Commission Decision 96/350/EC (OJ L 135, 6.6.1996, p. 32).

▼B

- (17) Whereas the measures taken to reduce the landfill of biodegradable waste should also aim at encouraging the separate collection of biodegradable waste, sorting in general, recovery and recycling;
- (18) Whereas, because of the particular features of the landfill method of waste disposal, it is necessary to introduce a specific permit procedure for all classes of landfill in accordance with the general licensing requirements already set down in Directive 75/442/EEC and the general requirements of Directive 96/61/EC concerning integrated pollution prevention and control ⁽¹⁾ whereas the landfill site's compliance with such a permit must be verified in the course of an inspection by the competent authority before the start of disposal operations;
- (19) Whereas, in each case, checks should be made to establish whether the waste may be placed in the landfill for which it is intended, in particular as regards hazardous waste;
- (20) Whereas, in order to prevent threats to the environment, it is necessary to introduce a uniform waste acceptance procedure on the basis of a classification procedure for waste acceptable in the different categories of landfill, including in particular standardised limit values; whereas to that end a consistent and standardised system of waste characterisation, sampling and analysis must be established in time to facilitate implementation of this Directive; whereas the acceptance criteria must be particularly specific with regard to inert waste;
- (21) Whereas, pending the establishment of such methods of analysis or of the limit values necessary for characterisation, Member States may for the purposes of this Directive maintain or draw up national lists of waste which is acceptable or unacceptable for landfill, or define criteria, including limit values, similar to those laid down in this Directive for the uniform acceptance procedure;
- (22) Whereas for certain hazardous waste to be accepted in landfills for non-hazardous waste acceptance criteria should be developed by the technical committee;
- (23) Whereas it is necessary to establish common monitoring procedures during the operation and after-care phases of a landfill in order to identify any possible adverse environmental effect of the landfill and take the appropriate corrective measures;
- (24) Whereas it is necessary to define when and how a landfill should be closed and the obligations and responsibility of the operator on the site during the after-care period;
- (25) Whereas landfill sites that have been closed prior to the date of transposition of this Directive should not be subject to its provisions on closure procedure;

⁽¹⁾ OJ L 257, 10.10.1996, p. 26.

▼B

- (26) Whereas the future conditions of operation of existing landfills should be regulated in order to take the necessary measures, within a specified period of time, for their adaptation to this Directive on the basis of a site-conditioning plan;
- (27) Whereas for operators of existing landfills having, in compliance with binding national rules equivalent to those of Article 14 of this Directive, already submitted the documentation referred to in Article 14(a) of this Directive prior to its entry into force and for which the competent authority authorised the continuation of their operation, there is no need to resubmit this documentation nor for the competent authority to deliver a new authorisation;
- (28) Whereas the operator should make adequate provision by way of a financial security or any other equivalent to ensure that all the obligations flowing from the permit are fulfilled, including those relating to the closure procedure and after-care of the site;
- (29) Whereas measures should be taken to ensure that the price charged for waste disposal in a landfill cover all the costs involved in the setting up and operation of the facility, including as far as possible the financial security or its equivalent which the site operator must provide, and the estimated cost of closing the site including the necessary after-care;
- (30) Whereas, when a competent authority considers that a landfill is unlikely to cause a hazard to the environment for longer than a certain period, the estimated costs to be included in the price to be charged by an operator may be limited to that period;
- (31) Whereas it is necessary to ensure the proper application of the provisions implementing this Directive throughout the Community, and to ensure that the training and knowledge acquired by landfill operators and staff afford them the necessary skills;
- (32) Whereas the Commission must establish a standard procedure for the acceptance of waste and set up a standard classification of waste acceptable in a landfill in accordance with the committee procedure laid down in Article 18 of Directive 75/442/EEC;
- (33) Whereas adaptation of the Annexes to this Directive to scientific and technical progress and the standardisation of the monitoring, sampling and analysis methods must be adopted under the same committee procedure;
- (34) Whereas the Member States must send regular reports to the Commission on the implementation of this Directive paying particular attention to the national strategies to be set up in pursuance of Article 5; whereas on the basis of these reports the Commission shall report to the European Parliament and the Council;

▼B

HAS ADOPTED THIS DIRECTIVE

*Article 1***Overall objective**

1. With a view to meeting the requirements of Directive 75/442/EEC, and in particular Articles 3 and 4 thereof, the aim of this Directive is, by way of stringent operational and technical requirements on the waste and landfills, to provide for measures, procedures and guidance to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air, and on the global environment, including the greenhouse effect, as well as any resulting risk to human health, from landfilling of waste, during the whole life-cycle of the landfill.

2. In respect of the technical characteristics of landfills, this Directive contains, for those landfills to which Directive 96/61/EC is applicable, the relevant technical requirements in order to elaborate in concrete terms the general requirements of that Directive. The relevant requirements of Directive 96/61/EC shall be deemed to be fulfilled if the requirements of this Directive are complied with.

*Article 2***Definitions**

For the purposes of this Directive:

- (a) ‘*waste*’ means any substance or object which is covered by Directive 75/442/EEC;
- (b) ‘*municipal waste*’ means waste from households, as well as other waste which, because of its nature or composition, is similar to waste from household;
- (c) ‘*hazardous waste*’ means any waste which is covered by Article 1(4) of Council Directive 91/689/EEC of 12 December 1991 on hazardous waste ⁽¹⁾
- (d) ‘*non-hazardous waste*’ means waste which is not covered by paragraph (c);
- (e) ‘*inert waste*’ means waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater;
- (f) ‘*underground storage*’ means a permanent waste storage facility in a deep geological cavity such as a salt or potassium mine;

⁽¹⁾ OJ L 377, 31.12.1991, p. 20. Directive as last amended by Directive 94/31/EC (OJ L 168, 2.7.1994, p. 28);

▼B

- (g) '*landfill*' means a waste disposal site for the deposit of the waste onto or into land (i.e. underground), including:
- internal waste disposal sites (i.e. landfill where a producer of waste is carrying out its own waste disposal at the place of production), and
 - a permanent site (i.e. more than one year) which is used for temporary storage of waste,
- but excluding:
- facilities where waste is unloaded in order to permit its preparation for further transport for recovery, treatment or disposal elsewhere, and
 - storage of waste prior to recovery or treatment for a period less than three years as a general rule, or
 - storage of waste prior to disposal for a period less than one year;
- (h) '*treatment*' means the physical, thermal, chemical or biological processes, including sorting, that change the characteristics of the waste in order to reduce its volume or hazardous nature, facilitate its handling or enhance recovery;
- (i) '*leachate*' means any liquid percolating through the deposited waste and emitted from or contained within a landfill;
- (j) '*landfill gas*' means all the gases generated from the landfilled waste;
- (k) '*eluate*' means the solution obtained by a laboratory leaching test;
- (l) '*operator*' means the natural or legal person responsible for a landfill in accordance with the internal legislation of the Member State where the landfill is located; this person may change from the preparation to the after-care phase;
- (m) '*biodegradable waste*' means any waste that is capable of undergoing anaerobic or aerobic decomposition, such as food and garden waste, and paper and paperboard;
- (n) '*holder*' means the producer of the waste or the natural or legal person who is in possession of it;
- (o) '*applicant*' means any person who applies for a landfill permit under this Directive;
- (p) '*competent authority*' means that authority which the Member States designate as responsible for performing the duties arising from this Directive;
- (q) '*liquid waste*' means any waste in liquid form including waste waters but excluding sludge;

▼B

- (r) ‘*isolated settlement*’ means a settlement:
- with no more than 500 inhabitants per municipality or settlement and no more than five inhabitants per square kilometre and,
 - where the distance to the nearest urban agglomeration with at least 250 inhabitants per square kilometre is not less than 50 km, or with difficult access by road to those nearest agglomerations, due to harsh meteorological conditions during a significant part of the year.

*Article 3***Scope**

1. Member States shall apply this Directive to any landfill as defined in Article 2(g).
2. Without prejudice to existing Community legislation, the following shall be excluded from the scope of this Directive:
 - the spreading of sludges, including sewage sludges, and sludges resulting from dredging operations, and similar matter on the soil for the purposes of fertilisation or improvement,
 - the use of inert waste which is suitable, in redevelopment/restoration and filling-in work, or for construction purposes, in landfills,
 - the deposit of non-hazardous dredging sludges alongside small waterways from where they have been dredged out and of non-hazardous sludges in surface water including the bed and its sub soil,
 - the deposit of unpolluted soil or of non-hazardous inert waste resulting from prospecting and extraction, treatment, and storage of mineral resources as well as from the operation of quarries.
3. Without prejudice to Directive 75/442/EEC Member States may declare at their own option, that the deposit of non-hazardous waste, to be defined by the committee established under Article 17 of this Directive, other than inert waste, resulting from prospecting and extraction, treatment and storage of mineral resources as well as from the operation of quarries and which are deposited in a manner preventing environmental pollution or harm to human health, can be exempted from the provisions in Annex I, points 2, 3.1, 3.2 and 3.3 of this Directive.
4. Without prejudice to Directive 75/442/EEC Member States may declare, at their own option, parts or all of Articles 6(d), 7(i), 8(a)(iv), 10, 11(1)(a), (b) and (c), 12(a) and (c), Annex I, points 3 and 4, Annex II (except point 3, level 3, and point 4) and Annex III, points 3 to 5 to this Directive not applicable to:
 - (a) landfill sites for non-hazardous or inert wastes with a total capacity not exceeding 15 000 tonnes or with an annual intake not exceeding 1 000 tonnes serving islands, where this is the only landfill on the island and where this is exclusively destined for the disposal of waste generated on that island. Once the total capacity of that landfill has been used, any new landfill site established on the island shall comply with the requirements of this Directive;

▼B

- (b) landfill sites for non-hazardous or inert waste in isolated settlements if the landfill site is destined for the disposal of waste generated only by that isolated settlement.

Not later than two years after the date laid down in Article 18(1), Member States shall notify the Commission of the list of islands and isolated settlements that are exempted. The Commission shall publish the list of islands and isolated settlements.

5. Without prejudice to Directive 75/442/EEC Member States may declare, at their own option, that underground storage as defined in Article 2(f) of this Directive can be exempted from the provisions in Article 13(d) and in Annex I, point 2, except first indent, points 3 to 5 and in Annex III, points 2, 3 and 5 to this Directive.

*Article 4***Classes of landfill**

Each landfill shall be classified in one of the following classes:

- landfill for hazardous waste,
- landfill for non-hazardous waste,
- landfill for inert waste.

*Article 5***Waste and treatment not acceptable in landfills**

1. Member States shall set up a national strategy for the implementation of the reduction of biodegradable waste going to landfills, not later than two years after the date laid down in Article 18(1) and notify the Commission of this strategy. This strategy should include measures to achieve the targets set out in paragraph 2 by means of in particular, recycling, composting, biogas production or materials/energy recovery. Within 30 months of the date laid down in Article 18(1) the Commission shall provide the European Parliament and the Council with a report drawing together the national strategies.

2. This strategy shall ensure that:

- (a) not later than five years after the date laid down in Article 18(1), biodegradable municipal waste going to landfills must be reduced to 75 % of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available
- (b) not later than eight years after the date laid down in Article 18(1), biodegradable municipal waste going to landfills must be reduced to 50 % of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available;
- (c) not later than 15 years after the date laid down in Article 18(1), biodegradable municipal waste going to landfills must be reduced to 35 % of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available.

▼B

Two years before the date referred to in paragraph (c) the Council shall reexamine the above target, on the basis of a report from the Commission on the practical experience gained by Member States in the pursuance of the targets laid down in paragraphs (a) and (b) accompanied, if appropriate, by a proposal with a view to confirming or amending this target in order to ensure a high level of environmental protection.

Member States which in 1995 or the latest year before 1995 for which standardised EUROSTAT data is available put more than 80 % of their collected municipal waste to landfill may postpone the attainment of the targets set out in paragraphs (a), (b), or (c) by a period not exceeding four years. Member States intending to make use of this provision shall inform in advance the Commission of their decision. The Commission shall inform other Member States and the European Parliament of these decisions.

The implementation of the provisions set out in the preceding subparagraph may in no circumstances lead to the attainment of the target set out in paragraph (c) at a date later than four years after the date set out in paragraph (c).

3. Member States shall take measures in order that the following wastes are not accepted in a landfill:

- (a) liquid waste;
- (b) waste which, in the conditions of landfill, is explosive, corrosive, oxidising, highly flammable or flammable, as defined in Annex III to Directive 91/689/EEC;
- (c) hospital and other clinical wastes arising from medical or veterinary establishments, which are infectious as defined (property H9 in Annex III) by Directive 91/689/EEC and waste falling within category 14 (Annex I.A) of that Directive.
- (d) whole used tyres from two years from the date laid down in Article 18(1), excluding tyres used as engineering material, and shredded used tyres five years from the date laid down in Article 18(1) (excluding in both instances bicycle tyres and tyres with an outside diameter above 1 400 mm);
- (e) any other type of waste which does not fulfil the acceptance criteria determined in accordance with Annex II.

4. The dilution of mixture of waste solely in order to meet the waste acceptance criteria is prohibited.

Article 6

Waste to be accepted in the different classes of landfill

Member States shall take measures in order that:

- (a) only waste that has been subject to treatment is landfilled. This provision may not apply to inert waste for which treatment is not technically feasible, nor to any other waste for which such treatment does not contribute to the objectives of this Directive, as set out in Article 1, by reducing the quantity of the waste or the hazards to human health or the environment;
- (b) only hazardous waste that fulfils the criteria set out in accordance with Annex II is assigned to a hazardous landfill;

▼B

- (c) landfill for non-hazardous waste may be used for:
- (i) municipal waste;
 - (ii) non-hazardous waste of any other origin, which fulfil the criteria for the acceptance of waste at landfill for non-hazardous waste set out in accordance with Annex II;
 - (iii) stable, non-reactive hazardous wastes (e.g. solidified, vitrified), with leaching behaviour equivalent to those of the non-hazardous wastes referred to in point (ii), which fulfil the relevant acceptance criteria set out in accordance with Annex II. These hazardous wastes shall not be deposited in cells destined for biodegradable non-hazardous waste,
- (d) inert waste landfill sites shall be used only for inert waste.

*Article 7***Application for a permit**

Member States shall take measures in order that the application for a landfill permit must contain at least particulars of the following:

- (a) the identity of the applicant and of the operator when they are different entities;
- (b) the description of the types and total quantity of waste to be deposited;
- (c) the proposed capacity of the disposal site;
- (d) the description of the site, including its hydrogeological and geological characteristics;
- (e) the proposed methods for pollution prevention and abatement;
- (f) the proposed operation, monitoring and control plan;
- (g) the proposed plan for the closure and after-care procedures;
- (h) where an impact assessment is required under Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment⁽¹⁾, the information provided by the developer in accordance with Article 5 of that Directive;
- (i) the financial security by the applicant, or any other equivalent provision, as required under Article 8(a)(iv) of this Directive.

Following a successful application for a permit, this information shall be made available to the competent national and Community statistical authorities when requested for statistical purposes.

⁽¹⁾ OJ L 175, 5.7.1985, p. 40. Directive as amended by Directive 97/11/EC (OJ L 73, 14.3.1997, p. 5).

▼B*Article 8***Conditions of the permit**

Member States shall take measures in order that:

- (a) the competent authority does not issue a landfill permit unless it is satisfied that:
 - (i) without prejudice to Article 3(4) and (5), the landfill project complies with all the relevant requirements of this Directive, including the Annexes;
 - (ii) the management of the landfill site will be in the hands of a natural person who is technically competent to manage the site; professional and technical development and training of landfill operators and staff are provided;
 - (iii) the landfill shall be operated in such a manner that the necessary measures are taken to prevent accidents and limit their consequences;
 - (iv) adequate provisions, by way of a financial security or any other equivalent, on the basis of modalities to be decided by Member States, has been or will be made by the applicant prior to the commencement of disposal operations to ensure that the obligations (including after-care provisions) arising under the permit issued under the provisions of this Directive are discharged and that the closure procedures required by Article 13 are followed. This security or its equivalent shall be kept as long as required by maintenance and after-care operation of the site in accordance with Article 13(d). Member States may declare, at their own option, that this point does not apply to landfills for inert waste;
- (b) the landfill project is in line with the relevant waste management plan or plans referred to in Article 7 of Directive 75/442/EEC;
- (c) prior to the commencement of disposal operations, the competent authority shall inspect the site in order to ensure that it complies with the relevant conditions of the permit. This will not reduce in any way the responsibility of the operator under the conditions of the permit.

*Article 9***Content of the permit**

Specifying and supplementing the provisions set out in Article 9 of Directive 75/442/EEC and Article 9 of Directive 96/61/EC, the landfill permit shall state at least the following:

- (a) the class of the landfill;
- (b) the list of defined types and the total quantity of waste which are authorised to be deposited in the landfill;
- (c) requirements for the landfill preparations, landfilling operations and monitoring and control procedures, including contingency plans (Annex III, point 4.B), as well as provisional requirements for the closure and after-care operations;

▼B

- (d) the obligation on the applicant to report at least annually to the competent authority on the types and quantities of waste disposed of and on the results of the monitoring programme as required in Articles 12 and 13 and Annex III.

*Article 10***Cost of the landfill of waste**

Member States shall take measures to ensure that all of the costs involved in the setting up and operation of a landfill site, including as far as possible the cost of the financial security or its equivalent referred to in Article 8(a)(iv), and the estimated costs of the closure and after-care of the site for a period of at least 30 years shall be covered by the price to be charged by the operator for the disposal of any type of waste in that site. Subject to the requirements of Council Directive 90/313/EEC of 7 June 1990 on the freedom of access to information on the environment ⁽¹⁾ Member States shall ensure transparency in the collection and use of any necessary cost information.

*Article 11***Waste acceptance procedures**

1. Member States shall take measures in order that prior to accepting the waste at the landfill site:

- (a) before or at the time of delivery, or of the first in a series of deliveries, provided the type of waste remains unchanged, the holder or the operator can show, by means of the appropriate documentation, that the waste in question can be accepted at that site according to the conditions set in the permit, and that it fulfils the acceptance criteria set out in Annex II;

(b) the following reception procedures are respected by the operator:

— checking of the waste documentation, including those documents required by Article 5(3) of Directive 91/689/EEC and, where they apply, those required by Council Regulation (EEC) No 259/93 of 1 February 1993 on the supervision and control of shipments of waste within, into and out of the European Community ⁽²⁾;

— visual inspection of the waste at the entrance and at the point of deposit and, as appropriate, verification of conformity with the description provided in the documentation submitted by the holder. If representative samples have to be taken in order to implement Annex II, point 3, level 3, the results of the analyses shall be kept and the sampling shall be made in conformity with Annex II, point 5. These samples shall be kept at least one month;

⁽¹⁾ OJ L 158, 23.6.1990, p. 56.

⁽²⁾ OJ L 30, 6.2.1993, p. 1. Regulation as amended by Regulation (EC) No 120/97 (OJ L 22, 24.1.1997, p. 14).

▼B

- keeping a register of the quantities and characteristics of the waste deposited, indicating origin, date of delivery, identity of the producer or collector in the case of municipal waste, and, in the case of hazardous waste, the precise location on the site. This information shall be made available to the competent national and Community statistical authorities when requested for statistical purposes;
- (c) the operator of the landfill shall always provide written acknowledgement of receipt of each delivery accepted on the site;
- (d) without prejudice to the provisions of Regulation (EEC) No 259/93, if waste is not accepted at a landfill the operator shall notify without delay the competent authority of the non-acceptance of the waste.

2. For landfill sites which have been exempted from provisions of this Directive by virtue of Article 3(4) and (5), Member States shall take the necessary measures to provide for:

- regular visual inspection of the waste at the point of deposit in order to ensure that only non-hazardous waste from the island or the isolated settlement is accepted at the site; and
- a register on the quantities of waste that are deposited at the site be kept.

Member States shall ensure that information on the quantities and, where possible, the type of waste going to such exempted sites forms part of the regular reports to the Commission on the implementation of the Directive.

*Article 12***Control and monitoring procedures in the operational phase**

Member States shall take measures in order that control and monitoring procedures in the operational phase meet at least the following requirements:

- (a) the operator of a landfill shall carry out during the operational phase a control and monitoring programme as specified in Annex III;
- (b) the operator shall notify the competent authority of any significant adverse environmental effects revealed by the control and monitoring procedures and follow the decision of the competent authority on the nature and timing of the corrective measures to be taken. These measures shall be undertaken at the expense of the operator.

At a frequency to be determined by the competent authority, and in any event at least once a year, the operator shall report, on the basis of aggregated data, all monitoring results to the competent authorities for the purpose of demonstrating compliance with permit conditions and increasing the knowledge on waste behaviour in the landfills;

- (c) the quality control of the analytical operations of the control and monitoring procedures and/or of the analyses referred to in Article 11(1)(b) are carried out by competent laboratories.

▼B*Article 13***Closure and after-care procedures**

Member States shall take measures in order that, in accordance, where appropriate, with the permit:

- (a) a landfill or part of it shall start the closure procedure:
 - (i) when the relevant conditions stated in the permit are met; or
 - (ii) under the authorisation of the competent authority, at the request of the operator; or
 - (iii) by reasoned decision of the competent authority;
- (b) a landfill or part of it may only be considered as definitely closed after the competent authority has carried out a final on-site inspection, has assessed all the reports submitted by the operator and has communicated to the operator its approval for the closure. This shall not in any way reduce the responsibility of the operator under the conditions of the permit;
- (c) after a landfill has been definitely closed, the operator shall be responsible for its maintenance, monitoring and control in the after-care phase for as long as may be required by the competent authority, taking into account the time during which the landfill could present hazards.

The operator shall notify the competent authority of any significant adverse environmental effects revealed by the control procedures and shall follow the decision of the competent authority on the nature and timing of the corrective measures to be taken;

- (d) for as long as the competent authority considers that a landfill is likely to cause a hazard to the environment and without prejudice to any Community or national legislation as regards liability of the waste holder, the operator of the site shall be responsible for monitoring and analysing landfill gas and leachate from the site and the groundwater regime in the vicinity of the site in accordance with Annex III.

*Article 14***Existing landfill sites**

Member States shall take measures in order that landfills which have been granted a permit, or which are already in operation at the time of transposition of this Directive, may not continue to operate unless the steps outlined below are accomplished as soon as possible and within eight years after the date laid down in Article 18(1) at the latest:

- (a) with a period of one year after the date laid down in Article 18(1), the operator of a landfill shall prepare and present to the competent authorities, for their approval, a conditioning plan for the site including the particulars listed in Article 8 and any corrective measures which the operator considers will be needed in order to comply with the requirements of this Directive with the exception of the requirements in Annex I, point 1;
- (b) following the presentation of the conditioning plan, the competent authorities shall take a definite decision on whether operations may continue on the basis of the said conditioning plan and this Directive. Member States shall take the necessary measures to close down as soon as possible, in accordance with Article 7(g) and 13, sites which have not been granted, in accordance with Article 8, a permit to continue to operate;

▼ B

- (c) on the basis of the approved site-conditioning plan, the competent authority shall authorise the necessary work and shall lay down a transitional period for the completion of the plan. Any existing landfill shall comply with the requirements of this Directive with the exception of the requirements in Annex I, point 1 within eight years after the date laid down in Article 18(1);
- (d) (i) within one year after the date laid down in Article 18(1), Articles 4, 5, and 11 and Annex II shall apply to landfills for hazardous waste;
- (ii) within three years after the date laid down in Article 18(1), Article 6 shall apply to landfills for hazardous waste.

*Article 15***Obligation to report**

At intervals of three years Member States shall send to the Commission a report on the implementation of this Directive, paying particular attention to the national strategies to be set up in pursuance of Article 5. The report shall be drawn up on the basis of a questionnaire or outline drafted by the Commission in accordance with the procedure laid down in Article 6 of Directive 91/692/EEC ⁽¹⁾ The questionnaire or outline shall be sent to Member States six months before the start of the period covered by the report. The report shall be sent to the Commission within nine months of the end of the three-year period covered by it.

The Commission shall publish a Community report on the implementation of this Directive within nine months of receiving the reports from the Member States.

▼ M2*Article 16***Committee procedure**

Measures necessary to adapt the Annexes to this Directive to scientific and technical progress and to establish the standardisation of control, sampling and analysis methods in relation to the landfill of waste shall be adopted by the Commission, assisted by the Committee established by Article 18 of Directive 2006/12/EC. Those measures, designed to amend non-essential elements of this Directive, *inter alia*, by supplementing it, shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 17(3). To this end, as regards Annex II, the Committee shall take into account the general principles and general procedures for testing and acceptance criteria set out in Annex II and shall set specific criteria and/or test methods and associated limit values for each class of landfill, including if necessary specific types of landfill within each class, including underground storage.

The Commission shall, in accordance with the regulatory procedure referred to in Article 17(2), adopt, and when necessary amend, provisions for the harmonisation and regular transmission of the statistical data referred to in Articles 5, 7 and 11.

⁽¹⁾ OJ L 377, 31.12.1991, p. 48.

▼M1*Article 17*

1. The Commission shall be assisted by a committee.
2. Where reference is made to this Article, Articles 5 and 7 of Decision 1999/468/EC ⁽¹⁾ shall apply, having regard to the provisions of Article 8 thereof.

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

▼M2

3. Where reference is made to this paragraph, Article 5a(1) to (4) and Article 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

▼B*Article 18***Transposition**

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive not later than two years after its entry into force. They shall forthwith inform the Commission thereof.

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 methods of making such a reference shall be laid down by Member States.

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

*Article 19***Entry into force**

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

*Article 20***Addressees**

This Directive is addressed to the Member States.

⁽¹⁾ Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission (OJ L 184, 17.7.1999, p. 23).

*ANNEX I***GENERAL REQUIREMENTS FOR ALL CLASSES OF LANDFILLS****1. Location**

1.1. The location of a landfill must take into consideration requirements relating to:

- (a) the distances from the boundary of the site to residential and recreation areas, waterways, water bodies and other agricultural or urban sites;
- (b) the existence of groundwater, coastal water or nature protection zones in the area;
- (c) the geological and hydrogeological conditions in the area;
- (d) the risk of flooding, subsidence, landslides or avalanches on the site;
- (e) the protection of the nature or cultural patrimony in the area.

1.2. The landfill can be authorised only if the characteristics of the site with respect to the abovementioned requirements, or the corrective measures to be taken, indicate that the landfill does not pose a serious environmental risk.

2. Water control and leachate management

Appropriate measures shall be taken, with respect to the characteristics of the landfill and the meteorological conditions, in order to:

- control water from precipitations entering into the landfill body,
- prevent surface water and/or groundwater from entering into the land-filled waste,
- collect contaminated water and leachate. If an assessment based on consideration of the location of the landfill and the waste to be accepted shows that the landfill poses no potential hazard to the environment, the competent authority may decide that this provision does not apply,
- treat contaminated water and leachate collected from the landfill to the appropriate standard required for their discharge.

The above provisions may not apply to landfills for inert waste.

3. Protection of soil and water

3.1. A landfill must be situated and designed so as to meet the necessary conditions for preventing pollution of the soil, groundwater or surface water and ensuring efficient collection of leachate as and when required according to Section 2. Protection of soil, groundwater and surface water is to be achieved by the combination of a geological barrier and a bottom liner during the operational/active phase and by the combination of a geological barrier and a bottom liner during the operational/active phase and by the combination of a geological barrier and a top liner during the passive phase/post closure.

3.2. The geological barrier is determined by geological and hydrogeological conditions below and in the vicinity of a landfill site providing sufficient attenuation capacity to prevent a potential risk to soil and groundwater.

▼B

The landfill base and sides shall consist of a mineral layer which satisfies permeability and thickness requirements with a combined effect in terms of protection of soil, groundwater and surface water at least equivalent to the one resulting from the following requirements:

- landfill for hazardous waste: $K \leq 1,0 \times 10^{-9}$ m/s; thickness ≥ 5 m,
- landfill for non-hazardous waste: $K \leq 1,0 \times 10^{-9}$ m/s; thickness ≥ 1 m,
- landfill for inert waste: $K \leq 1,0 \times 10^{-7}$ m/s; thickness ≥ 1 m,

m/s: meter/second.

Where the geological barrier does not naturally meet the above conditions it can be completed artificially and reinforced by other means giving equivalent protection. An artificially established geological barrier should be no less than 0,5 metres thick.

- 3.3. In addition to the geological barrier described above a leachate collection and sealing system must be added in accordance with the following principles so as to ensure that leachate accumulation at the base of the landfill is kept to a minimum:

Leachate collection and bottom sealing

Landfill category	non hazardous	hazardous
Artificial sealing liner	required	required
Drainage layer $\geq 0,5$ m	required	required

Member States may set general or specific requirements for inert waste landfills and for the characteristics of the abovementioned technical means.

If the competent authority after a consideration of the potential hazards to the environment finds that the prevention of leachate formation is necessary, a surface sealing may be prescribed. Recommendations for the surface sealing are as follows:

Landfill category	non hazardous	hazardous
Gas drainage layer	required	not required
Artificial sealing liner	not required	required
Impermeable mineral layer	required	required
Drainage layer $> 0,5$ m	required	required
Top soil cover > 1 m	required	required.

- 3.4. If, on the basis of an assessment of environmental risks taking into account, in particular, Directive 80/68/EEC ⁽¹⁾, the competent authority has decided, in accordance with Section 2 ('Water control and leachate management'), that collection and treatment of leachate is not necessary or it has been established that the landfill poses no potential hazard to soil, groundwater or surface water, the requirements in paragraphs 3.2 and 3.3 above may be reduced accordingly. In the case of landfills for inert waste these requirements may be adapted by national legislation.

⁽¹⁾ OJ L 20, 26.1.1980, p. 43. Directive as last amended by Directive 91/692/EEC (OJ L 377, 31.12.1991, p. 48).

▼B

3.5. The method to be used for the determination of the permeability coefficient for landfills, in the field and for the whole extension of the site, is to be developed and approved by the Committee set up under Article 17 of this Directive.

4. Gas control

4.1. Appropriate measures shall be taken in order to control the accumulation and migration of landfill gas (Annex III).

4.2. Landfill gas shall be collected from all landfills receiving biodegradable waste and the landfill gas must be treated and used. If the gas collected cannot be used to produce energy, it must be flared.

4.3. The collection, treatment and use of landfill gas under paragraph 4.2 shall be carried on in a manner which minimises damage to or deterioration of the environment and risk to human health.

5. Nuisances and hazards

Measures shall be taken to minimise nuisances and hazards arising from the landfill through:

- emissions of odours and dust,
- wind-blown materials,
- noise and traffic,
- birds, vermin and insects,
- formation and aerosols,
- fires.

The landfill shall be equipped so that dirt originating from the site is not dispersed onto public roads and the surrounding land.

6. Stability

The emplacement of waste on the site shall take place in such a way as to ensure stability of the mass of waste and associated structures, particularly in respect of avoidance of slippages. Where an artificial barrier is established it must be ascertained that the geological substratum, considering the morphology of the landfill, is sufficiently stable to prevent settlement that may cause damage to the barrier.

7. Barriers

The landfill shall be secured to prevent free access to the site. The gates shall be locked outside operating hours. The system of control and access to each facility should contain a programme of measures to detect and discourage illegal dumping in the facility.

▼M3

8. Temporary storage of metallic mercury

For the purposes of temporary storage for more than 1 year of metallic mercury, the following requirements shall apply:

- Metallic mercury shall be stored separately from other waste.
- Containers shall be stored in collecting basins suitably coated so as to be free of cracks and gaps and impervious to metallic mercury with a containment volume adequate for the quantity of mercury stored.

▼ **M3**

- The storage site shall be provided with engineered or natural barriers that are adequate to protect the environment against mercury emissions and a containment volume adequate for the total quantity of mercury stored.
- The storage site floors shall be covered with mercury-resistant sealants. A slope with a collection sump shall be provided.
- The storage site shall be equipped with a fire protection system.
- Storage shall be arranged in a way to ensure that all containers are easily retrievable.

*ANNEX II***WASTE ACCEPTANCE CRITERIA AND PROCEDURES****1. Introduction**

This Annex describes:

- general principles for acceptance of waste at the various classes of landfills. The future waste classification procedure should be based on these principles,
- guidelines outlining preliminary waste acceptance procedures to be followed until a uniform waste classification and acceptance procedure has been developed. This procedure will, together with the relevant sampling procedures, be developed by the technical Committee referred to in Article 16 of this Directive. The technical Committee shall develop criteria which have to be fulfilled for certain hazardous waste to be accepted in landfills for non-hazardous waste. These criteria should, in particular, take into account the short, medium and long term leaching behaviour of such waste. These criteria shall be developed within two years of the entry into force of this Directive. The technical Committee shall also develop criteria which have to be fulfilled for waste to be accepted in underground storage. These criteria must take into account, in particular, that the waste is not to be expected to react with each other and with the rock.

This work by the technical Committee, with the exception of proposals for the standardisation of control, sampling and analysis methods in relation to the Annexes of this Directive which shall be adopted within two years after the entry into force of this Directive, shall be completed within three years from the entry into force of this Directive and must be carried out having regard to the objectives set forth in Article 1 of this Directive.

2. General principles

The composition, leachability, long-term behaviour and general properties of a waste to be landfilled must be known as precisely as possible. Waste acceptance at a landfill can be based either on lists of accepted or refused waste, defined by nature and origin, and on waste analysis methods and limit values for the properties of the waste to be accepted. The future waste acceptance procedures described in this Directive shall as far as possible be based on standardised waste analysis methods and limit values for the properties of waste to be accepted.

Before the definition of such analysis methods and limit values, Member States should at least set national lists of waste to be accepted or refused at each class of landfill, or defined the criteria required to be on the lists. In order to be accepted at a particular class of landfill, a type of waste must be on the relevant national list or fulfil criteria similar to those required to be on the list. These lists, or the equivalent criteria, and the analysis methods and limit values shall be sent to the Commission within six months of the transposition of this Directive or whenever they are adopted at national level.

These lists or acceptance criteria should be used to establish site specific lists, i.e. the list of accepted waste specified in the permit in accordance with Article 9 of this Directive.

The criteria for acceptance of waste on the reference lists or at a class of landfill may be based on other legislation and/or on waste properties.

▼B

Criteria for acceptance at a specific class of landfill must be derived from considerations pertaining to:

- protection of the surrounding environment (in particular groundwater and surface water),
- protection of the environmental protection systems (e.g. liners and leachate treatment systems),
- protection of the desired waste-stabilisation processes within the landfill,
- protection against human-health hazards.

Examples of waste property-based criteria are:

- requirements on knowledge of total composition,
- limitations on the amount of organic matter in the waste,
- requirements or limitations on the biodegradability of the organic waste components,
- limitations on the amount of specified, potentially harmful/hazardous components (in relation to the abovementioned protection criteria),
- limitations on the potential and expected leachability of specified, potentially harmful/hazardous components (in relation to the abovementioned protection criteria),
- ecotoxicological properties of the waste and the resulting leachate.

The property-based criteria for acceptance of waste must generally be most extensive for inert waste landfills and can be less extensive for non-hazardous waste landfills and least extensive for hazardous waste landfills owing to the higher environmental protection level of the latter two.

3. General procedures for testing and acceptance of waste

The general characterisation and testing of waste must be based on the following three-level hierarchy:

Level 1: Basic characterisation. This constitutes a thorough determination, according to standardised analysis and behaviour-testing methods, of the short and long-term leaching behaviour and/or characteristic properties of the waste.

Level 2: Compliance testing. This constitutes periodical testing by simpler standardised analysis and behaviour-testing methods to determine whether a waste complies with permit conditions and/or specific reference criteria. The tests focus on key variables and behaviour identified by basic characterisation.

Level 3: On-site verification. This constitutes rapid check methods to confirm that a waste is the same as that which has been subjected to compliance testing and that which is described in the accompanying documents. It may merely consist of a visual inspection of a load of waste before and after unloading at the landfill site.

A particular type of waste must normally be characterised at Level 1 and pass the appropriate criteria in order to be accepted on a reference list. In order to remain on a site-specific list, a particular type of waste must at regular intervals (e.g. annually) be tested at Level 2 and pass the appropriate criteria. Each waste load arriving at the gate of a landfill must be subjected to Level 3 verification.

▼ B

Certain waste types may be exempted permanently to temporarily from testing at Level 1. This may be due to impracticability to testing, to unavailability of appropriate testing procedures and acceptance criteria or to overriding legislation.

4. Guidelines for preliminary waste acceptance procedures

Until this Annex is fully completed only Level 3 testing is mandatory and Level 1 and Level 2 applied to the extent possible. At this preliminary stage waste to be accepted at a particular class of landfill must either be on a restrictive national or site-specific list for that class of landfill or fulfil criteria similar to those required to get on the list.

The following general guidelines may be used to set preliminary criteria for acceptance of waste at the three major classes of landfill or the corresponding lists.

Inert waste landfills: only inert waste as defined in Article 2(e) can be accepted on the list.

Non-hazardous waste landfills: in order to be accepted on the list a waste type must not be covered by Directive 91/689/EEC.

Hazardous waste landfills: a preliminary rough list for hazardous waste landfills would consist of only those waste types covered by Directive 91/689/EEC. Such waste types should, however not be accepted on the list without prior treatment if they exhibit total contents or leachability of potentially hazardous components that are high enough to constitute a short-term occupational or environmental risk or to prevent sufficient waste stabilisation within the projected lifetime of the landfill.

5. Sampling of waste

Sampling of waste may pose serious problems with respect to representation and techniques owing to the heterogeneous nature of many wastes. A European standard for sampling of waste will be developed. Until this standard is approved by Member States in accordance with Article 17 of this Directive, the Member States may apply national standards and procedures.

▼ M3**6. Specific requirements for metallic mercury**

For the purposes of temporary storage for more than 1 year of metallic mercury, the following requirements shall apply:

A. Composition of the mercury

Metallic mercury shall comply with the following specifications:

- mercury content greater than 99,9 % per weight,
- no impurities capable of corroding carbon or stainless steel (e.g. nitric acid solution, chloride salts solutions).

B. Containment

Containers used for the storage of metallic mercury shall be corrosion- and shock-resistant. Welds shall therefore be avoided. The containers shall comply in particular with the following specifications:

- container material: carbon steel (ASTM A36 minimum) or stainless steel (AISI 304, 316L),

▼ M3

- containers shall be gas and liquid tight,
- the outer side of the container shall be resistant against the storage conditions,
- the design type of the container shall successfully pass the drop test and the leakproofness tests as described in Chapters 6.1.5.3 and 6.1.5.4 of the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria.

The maximum filling ratio of the container shall be 80 % by volume to ensure that sufficient ullage is available and neither leakage nor permanent distortion of the container can occur as a result of an expansion of the liquid due to high temperature.

C. Acceptance procedures

Only containers with a certificate complying with the requirements set out in this Section shall be accepted.

Acceptance procedures shall comply with the following:

- only metallic mercury which fulfils the minimum acceptance criteria set out above shall be accepted,
- containers shall be visually inspected before storage. Damaged, leaking or corroded containers shall not be accepted,
- containers shall bear a durable stamp (made by punching) mentioning the identification number of the container, the construction material, its empty weight, the reference of the manufacturer and the date of construction,
- containers shall bear a plate permanently fixed to the container mentioning the identification number of the certificate.

D. Certificate

The certificate indicated in subsection C shall include the following elements:

- name and address of the waste producer,
- name and address of the responsible for the filling,
- place and date of filling,
- quantity of the mercury,
- the purity of the mercury and, if relevant, a description of the impurities, including the analytical report,
- confirmation that the containers have been used exclusively for the transport/storage of mercury,
- the identification numbers of the containers,
- any specific comments.

Certificates shall be issued by the producer of the waste or, in default, by the person responsible for its management.



ANNEX III

CONTROL AND MONITORING PROCEDURES IN OPERATION AND AFTER-CARE PHASES
1. Introduction

The purpose of this Annex is to provide the minimum procedures for monitoring to be carried out to check:

- that waste has been accepted to disposal in accordance with the criteria set for the category of landfill in question,
- that the processes within the landfill proceed as desired,
- that the environmental protection systems are functioning fully as intended,
- that the permit conditions for the landfill are fulfilled.

2. Meteorological data

Under their reporting obligation (Article 15), Member States should supply data on the collection method for meteorological data. It is up to Member States to decide how the data should be collected (*in situ*, national meteorological network, etc.).

Should Member States decide that water balances are an effective tool for evaluating whether leachate is building up in the landfill body or whether the site is leaking, it is recommended that the following data are collected from monitoring at the landfill or from the nearest meteorological station, as long as required by the competent authority in accordance with Article 13(c) of this Directive:

	Operation phase	After-care phase
1.1. Volume of precipitation	daily	daily, added to monthly values
1.2. Temperature (min., max., 14.00 h CET)	daily	monthly average
1.3. Direction and force of prevailing wind	daily	not required
1.4. Evaporation (lysimeter) ⁽¹⁾	daily	daily, added to monthly values
1.5. Atmospheric humidity (14.00 h CET)	daily	monthly average

⁽¹⁾ Or through other suitable methods.

3. Emission data: water, leachate and gas control

Sampling of leachate and surface water if present must be collected at representative points. Sampling and measuring (volume and composition) of leachate must be performed separately at each point at which leachate is discharged from the site. Reference: general guidelines on sampling technology, ISO 5667-2 (1991).

Monitoring of surface water if present shall be carried out at not less than two points, one upstream from the landfill and one downstream.

Gas monitoring must be representative for each section of the landfill. The frequency of sampling and analysis is listed in the following table. For leachate and water, a sample, representative of the average composition, shall be taken for monitoring.

▼B

The frequency of sampling could be adapted on the basis of the morphology of the landfill waste (in tumulus, buried, etc). This has to be specified in the permit.

	Operating phase	After-care phase ⁽²⁾
2.1. Leachate volume	monthly ⁽¹⁾ ⁽³⁾	every six months
2.2. Leachate composition ⁽²⁾	quarterly ⁽³⁾	every six months
2.3. Volume and composition of surface water ⁽⁷⁾	quarterly ⁽³⁾	every six months
2.4. Potential gas emissions and atmospheric pressure ⁽⁴⁾ (CH ₄ , CO ₂ , O ₂ , H ₂ S, H ₂ etc.)	monthly ⁽¹⁾ ⁽⁵⁾	every six months ⁽⁶⁾

⁽¹⁾ The frequency of sampling could be adapted on the basis of the morphology of the landfill waste (in tumulus, buried, etc.). This has to be specified in the permit.

⁽²⁾ The parameters to be measured and the substances to be analysed vary according to the composition of the waste deposited; they must be laid down in the permit document and reflect the leaching characteristics of the wastes.

⁽³⁾ If the evaluation of data indicates that longer intervals are equally effective, they may be adapted. For leachates, conductivity must always be measured at least once a year.

⁽⁴⁾ These measurements are related mainly to the content of organic material in the waste.

⁽⁵⁾ CH₄, CO₂, O₂, regularly, other gases as required, according to the composition of the waste deposited, with a view to reflecting its leaching properties.

⁽⁶⁾ Efficiency of the gas extraction system must be checked regularly.

⁽⁷⁾ On the basis of the characteristics of the landfill site, the competent authority may determine that these measurements are not required, and will report accordingly in the way laid down in Article 15 of the Directive.

2.1 and 2.2 apply only where leachate collection takes place (see Annex I(2)).

4. Protection of groundwater

A. Sampling

The measurements must be such as to provide information on groundwater likely to be affected by the discharging of waste, with at least one measuring point in the groundwater inflow region and two in the outflow region. This number can be increased on the basis of a specific hydrogeological survey and the need for an early identification of accidental leachate release in the groundwater.

Sampling must be carried out in at least three locations before the filling operations in order to establish reference values for future sampling. Reference: Sampling Groundwaters, ISO 5667, Part 11, 1993.

B. Monitoring

The parameters to be analysed in the samples taken must be derived from the expected composition of the leachate and the groundwater quality in the area. In selecting the parameters for analysis account should be taken of mobility in the groundwater zone. Parameters could include indicator parameters in order to ensure an early recognition of change in water quality ⁽¹⁾.

	Operation phase	After-care phase
Level of groundwater	every six months ⁽¹⁾	every six months ⁽¹⁾
Groundwater composition	site-specific frequency ⁽²⁾ ⁽³⁾	site-specific frequency ⁽²⁾ ⁽³⁾

⁽¹⁾ If there are fluctuating groundwater levels, the frequency must be increased.

⁽²⁾ The frequency must be based on possibility for remedial actions between two samplings if a trigger level is reached, i.e. the frequency must be determined on the basis of knowledge and the evaluation of the velocity of groundwater flow.

⁽³⁾ When a trigger level is reached (see C), verification is necessary by repeating the sampling. When the level has been confirmed, a contingency plan (laid down in the permit) must be followed.

⁽¹⁾ Recommended parameters: ph, TOC, phenols, heavy metals, fluoride, AS, oil/hydrocarbons.

▼B*C. Trigger levels*

Significant adverse environmental effects, as referred to in Articles 12 and 13 of this Directive, should be considered to have occurred in the case of groundwater, when an analysis of a groundwater sample shows a significant change in water quality. A trigger level must be determined taking account of the specific hydrogeological formations in the location of the landfill and groundwater quality. The trigger level must be laid down in the permit whenever possible.

The observations must be evaluated by means of control charts with established control rules and levels for each downgradient well. The control levels must be determined from local variations in groundwater quality.

5. Topography of the site: data on the landfill body

	Operating phase	After-care phase
5.1. Structure and composition of landfill body ⁽¹⁾	yearly	
5.2. Settling behaviour of the level of the landfill body	yearly	yearly reading

⁽¹⁾ Data for the status plan of the concerned landfill: surface occupied by waste, volume and composition of waste, methods of depositing, time and duration of depositing, calculation of the remaining capacity still available at the landfill.

▼M3**6. Specific requirements for metallic mercury**

For the purposes of temporary storage for more than 1 year of metallic mercury, the following requirements shall apply:

A. Monitoring, inspection and emergency requirements

A continuous mercury vapour monitoring system with a sensitivity of at least 0,02 mg mercury/m³ shall be installed in the storage site. Sensors shall be positioned at ground level and head level. This shall include a visual and acoustic alert system. The system shall be maintained annually.

The storage site and containers shall be visually inspected by an authorised person at least once a month. Where leaks are detected, the operator shall immediately take all necessary action to avoid any emission of mercury to the environment and restore the safety of the storage of the mercury. Any leaks shall be considered to have significant adverse environmental effects as referred to in Article 12(b).

Emergency plans and adequate protective equipment suitable for handling metallic mercury shall be available on site.

B. Record keeping

All documents containing the information referred to in Section 6 of Annex II and in point A of this Section, including the certificate accompanying the container, as well as records concerning the destocking and dispatch of the metallic mercury after its temporary storage and the destination and intended treatment shall be kept for at least 3 years after the termination of the storage.