

Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006 (Text with EEA relevance)

CHAPTER 4

OPERATION, CLOSURE AND POST-CLOSURE OBLIGATIONS

Article 12

CO₂ stream acceptance criteria and procedure

1 A CO₂ stream shall consist overwhelmingly of carbon dioxide. To this end, no waste or other matter may be added for the purpose of disposing of that waste or other matter. However, a CO₂ stream may contain incidental associated substances from the source, capture or injection process and trace substances added to assist in monitoring and verifying CO₂ migration. Concentrations of all incidental and added substances shall be below levels that would:

- a adversely affect the integrity of the storage site or the relevant transport infrastructure;
- b pose a significant risk to the environment or human health; or
- c breach the requirements of applicable Community legislation.

2 The Commission shall, if appropriate, adopt guidelines to help identify the conditions applicable on a case by case basis for respecting the criteria laid down in paragraph 1.

3 Member States shall ensure that the operator:

- a accepts and injects CO₂ streams only if an analysis of the composition, including corrosive substances, of the streams and a risk assessment have been carried out, and if the risk assessment has shown that the contamination levels are in line with the conditions referred to in paragraph 1;
- b keeps a register of the quantities and properties of the CO₂ streams delivered and injected, including the composition of those streams.

Article 13

Monitoring

1 Member States shall ensure that the operator carries out monitoring of the injection facilities, the storage complex (including where possible the CO₂ plume), and where appropriate the surrounding environment for the purpose of:

- a comparison between the actual and modelled behaviour of CO₂ and formation water, in the storage site;
- b detecting significant irregularities;
- c detecting migration of CO₂;
- d detecting leakage of CO₂;

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- e detecting significant adverse effects for the surrounding environment, including in particular on drinking water, for human populations, or for users of the surrounding biosphere;
- f assessing the effectiveness of any corrective measures taken pursuant to Article 16;
- g updating the assessment of the safety and integrity of the storage complex in the short and long term, including the assessment of whether the stored CO₂ will be completely and permanently contained.

2 The monitoring shall be based on a monitoring plan designed by the operator pursuant to the requirements laid down in Annex II, including details on the monitoring in accordance with the guidelines established pursuant to Article 14 and Article 23(2) of Directive 2003/87/EC, submitted to and approved by the competent authority pursuant to Article 7(6) and Article 9(5) of this Directive. The plan shall be updated pursuant to the requirements laid down in Annex II and in any case every five years to take account of changes to the assessed risk of leakage, changes to the assessed risks to the environment and human health, new scientific knowledge, and improvements in best available technology. Updated plans shall be re-submitted for approval to the competent authority.

Article 14

Reporting by the operator

At a frequency to be determined by the competent authority, and in any event at least once a year, the operator shall submit to the competent authority:

1. all results of the monitoring pursuant to Article 13 in the reporting period, including information on the monitoring technology employed;
2. the quantities and properties of the CO₂ streams delivered and injected, including composition of those streams, in the reporting period, registered pursuant to Article 12(3)(b);
3. proof of the putting in place and maintenance of the financial security pursuant to Article 19 and Article 9(9);
4. any other information the competent authority considers relevant for the purposes of assessing compliance with storage permit conditions and increasing the knowledge of CO₂ behaviour in the storage site.

Article 15

Inspections

1 Member States shall ensure that the competent authorities organise a system of routine and non-routine inspections of all storage complexes within the scope of this Directive for the purposes of checking and promoting compliance with the requirements of the Directive and of monitoring the effects on the environment and on human health.

2 Inspections should include activities such as visits of the surface installations, including the injection facilities, assessing the injection and monitoring operations carried out by the operator, and checking all relevant records kept by the operator.

3 Routine inspections shall be carried out at least once a year until three years after closure and every five years until transfer of responsibility to the competent authority has

occurred. They shall examine the relevant injection and monitoring facilities as well as the full range of relevant effects from the storage complex on the environment and on human health.

- 4 Non-routine inspections shall be carried out:
 - a if the competent authority has been notified or made aware of leakages or significant irregularities pursuant to Article 16(1);
 - b if the reports pursuant to Article 14 have shown insufficient compliance with the permit conditions;
 - c to investigate serious complaints related to the environment or human health;
 - d in other situations where the competent authority considers this appropriate.
- 5 Following each inspection, the competent authority shall prepare a report on the results of the inspection. The report shall evaluate compliance with the requirements of this Directive and indicate whether or not further action is necessary. The report shall be communicated to the operator concerned and shall be publicly available in accordance with relevant Community legislation within two months of the inspection.

Article 16

Measures in case of leakages or significant irregularities

- 1 Member States shall ensure that in the event of leakages or significant irregularities, the operator immediately notifies the competent authority, and takes the necessary corrective measures, including measures related to the protection of human health. In cases of leakages and significant irregularities which imply the risk of leakage, the operator shall also notify the competent authority pursuant to Directive 2003/87/EC.
- 2 The corrective measures referred to in paragraph 1 shall be taken as a minimum on the basis of a corrective measures plan submitted to and approved by the competent authority pursuant to Article 7(7) and Article 9(6).
- 3 The competent authority may at any time require the operator to take the necessary corrective measures, as well as measures related to the protection of human health. These may be additional to or different from those laid out in the corrective measures plan. The competent authority may also at any time take corrective measures itself.
- 4 If the operator fails to take the necessary corrective measures, the competent authority shall take the necessary corrective measures itself.
- 5 The competent authority shall recover the costs incurred in relation to the measures referred to in paragraphs 3 and 4 from the operator, including by drawing on the financial security pursuant to Article 19.

Article 17

Closure and post-closure obligations

- 1 A storage site shall be closed:
 - a if the relevant conditions stated in the permit have been met;
 - b at the substantiated request of the operator, after authorisation of the competent authority; or
 - c if the competent authority so decides after the withdrawal of a storage permit pursuant to Article 11(3).

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2 After a storage site has been closed pursuant to points (a) or (b) of paragraph 1, the operator remains responsible for monitoring, reporting and corrective measures, pursuant to the requirements laid down in this Directive, and for all obligations relating to the surrender of allowances in case of leakages pursuant to Directive 2003/87/EC and preventive and remedial actions pursuant to Articles 5 to 8 of Directive 2004/35/EC until the responsibility for the storage site is transferred to the competent authority pursuant to Article 18(1) to (5) of this Directive. The operator shall also be responsible for sealing the storage site and removing the injection facilities.

3 The obligations referred to in paragraph 2 shall be fulfilled on the basis of a post-closure plan designed by the operator based on best practice and in accordance with the requirements laid down in Annex II. A provisional post-closure plan shall be submitted to and approved by the competent authority pursuant to Article 7(8) and Article 9(7). Prior to the closure of a storage site pursuant to points (a) or (b) of paragraph 1 of this Article, the provisional post-closure plan shall be:

- a updated as necessary, taking account of risk analysis, best practice and technological improvements;
- b submitted to the competent authority for its approval; and
- c approved by the competent authority as the definitive post-closure plan.

4 After a storage site has been closed pursuant to paragraph 1(c), the competent authority shall be responsible for monitoring and corrective measures pursuant to the requirements laid down in this Directive and for all obligations relating to the surrender of allowances in case of leakages pursuant to Directive 2003/87/EC and preventive and remedial action pursuant to Articles 5(1) and 6(1) of Directive 2004/35/EC. The post-closure requirements pursuant to this Directive shall be fulfilled by the competent authority on the basis of the provisional post-closure plan referred to in paragraph 3 of this Article, which shall be updated as necessary.

5 The competent authority shall recover from the operator the costs incurred in relation to the measures referred to in paragraph 4, including by drawing on the financial security pursuant to Article 19.

Article 18

Transfer of responsibility

1 Where a storage site has been closed pursuant to points (a) or (b) of Article 17(1), all legal obligations relating to monitoring and corrective measures pursuant to the requirements laid down in this Directive, the surrender of allowances in the event of leakages pursuant to Directive 2003/87/EC and preventive and remedial action pursuant to Articles 5(1) and 6(1) of Directive 2004/35/EC, shall be transferred to the competent authority on its own initiative or upon request from the operator, if the following conditions are met:

- a all available evidence indicates that the stored CO₂ will be completely and permanently contained;
- b a minimum period, to be determined by the competent authority has elapsed. This minimum period shall be no shorter than 20 years, unless the competent authority is convinced that the criterion referred to in point (a) is complied with before the end of that period;
- c the financial obligations referred to in Article 20 have been fulfilled;
- d the site has been sealed and the injection facilities have been removed.

2 The operator shall prepare a report documenting that the condition referred to in paragraph 1(a) has been met and shall submit it to the competent authority for the latter to approve the transfer of responsibility. This report shall demonstrate, at least:

- a the conformity of the actual behaviour of the injected CO₂ with the modelled behaviour;
- b the absence of any detectable leakage;
- c that the storage site is evolving towards a situation of long-term stability.

The Commission may adopt guidelines on the assessment of the matters referred to in points (a), (b) and (c) of the first subparagraph, highlighting therein any implications for the technical criteria relevant to the determination of the minimum periods referred to in paragraph 1(b).

3 Where the competent authority is satisfied that the conditions referred to in points (a) and (b) of paragraph 1 are met, it shall prepare a draft decision of approval of the transfer of responsibility. The draft decision shall specify the method for determining that the conditions referred to in paragraph 1(d) have been met as well as any updated requirements for the sealing of the storage site and for the removal of injection facilities.

If the competent authority considers that the conditions referred to in points (a) and (b) of paragraph 1 are not met, it shall inform the operator of its reasons.

4 Member States shall make the reports referred to in paragraph 2 available to the Commission within one month after receipt. They shall also make available other related material that shall be taken into account by the competent authority when it prepares a draft decision of approval on the transfer of responsibility. They shall inform the Commission of all draft decisions of approval prepared by the competent authority pursuant to paragraph 3, including any other material taken into consideration for arriving at its conclusion. Within four months after receipt of the draft decision of approval, the Commission may issue a non-binding opinion on it. If the Commission decides not to issue an opinion, it shall inform the Member State within one month of submission of the draft decision of approval and state its reasons.

5 Where the competent authority is satisfied that the conditions referred to in points (a) to (d) of paragraph 1 are complied with, it shall adopt the final decision and notify that decision to the operator. The competent authority shall also notify the final decision to the Commission, and where it departs from the Commission opinion it shall state its reasons.

6 After the transfer of responsibility, routine inspections provided for in Article 15(3) shall cease and monitoring may be reduced to a level which allows for detection of leakages or significant irregularities. If any leakages or significant irregularities are detected, monitoring shall be intensified as required to assess the scale of the problem and the effectiveness of corrective measures.

7 In cases where there has been fault on the part of the operator, including cases of deficient data, concealment of relevant information, negligence, wilful deceit or a failure to exercise due diligence, the competent authority shall recover from the former operator the costs incurred after the transfer of responsibility has taken place. Without prejudice to Article 20, there shall be no further recovery of costs after the transfer of responsibility.

8 Where a storage site has been closed pursuant to Article 17(1)(c), transfer of responsibility shall be deemed to take place if and when all available evidence indicates that the stored CO₂ will be completely and permanently contained, and after the site has been sealed and the injection facilities have been removed.

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Article 19

Financial security

1 Member States shall ensure that proof that adequate provisions can be established, by way of financial security or any other equivalent, on the basis of arrangements to be decided by the Member States, is presented by the potential operator as part of the application for a storage permit. This is in order to ensure that all obligations arising under the permit issued pursuant to this Directive, including closure and post-closure requirements, as well as any obligations arising from inclusion of the storage site under Directive 2003/87/EC, can be met. This financial security shall be valid and effective before commencement of injection.

2 The financial security shall be periodically adjusted to take account of changes to the assessed risk of leakage and the estimated costs of all obligations arising under the permit issued pursuant to this Directive as well as any obligations arising from inclusion of the storage site under Directive 2003/87/EC.

3 The financial security or any other equivalent referred to in paragraph 1 shall remain valid and effective:

- a after a storage site has been closed pursuant to points (a) or (b) of Article 17(1), until the responsibility for the storage site is transferred to the competent authority pursuant to Article 18(1) to (5);
- b after the withdrawal of a storage permit pursuant to Article 11(3):
 - (i) until a new storage permit has been issued;
 - (ii) where the site is closed pursuant to Article 17(1)(c), until the transfer of responsibility pursuant to Article 18(8), provided the financial obligations referred to in Article 20 have been fulfilled.

Article 20

Financial mechanism

1 Member States shall ensure that the operator, on the basis of arrangements to be decided by the Member States, makes a financial contribution available to the competent authority before the transfer of responsibility pursuant to Article 18 has taken place. The contribution from the operator shall take into account those criteria referred to in Annex I and elements relating to the history of storing CO₂ relevant to determining the post-transfer obligations, and cover at least the anticipated cost of monitoring for a period of 30 years. This financial contribution may be used to cover the costs borne by the competent authority after the transfer of responsibility to ensure that the CO₂ is completely and permanently contained in geological storage sites after the transfer of responsibility.

2 The Commission may adopt guidelines for the estimation of the costs referred to in paragraph 1 to be developed in consultation with Member States with a view to ensuring transparency and predictability for operators.