

**2010 No. 2221**

**ENVIRONMENTAL PROTECTION**

**The Storage of Carbon Dioxide (Licensing etc.)  
Regulations 2010**

<i>Made</i>	- - - -	<i>6th September 2010</i>
<i>Laid before Parliament</i>		<i>9th September 2010</i>
<i>Coming into force</i>	- -	<i>1st October 2010</i>

The Secretary of State is designated<sup>(a)</sup> for the purposes of section 2(2) of the European Communities Act 1972<sup>(b)</sup> in relation to the environment.

These Regulations make provision for a purpose mentioned in section 2(2) of that Act, and it appears to the Secretary of State that it is necessary or expedient for certain references to EU instruments, or provisions of those instruments, in these Regulations to be construed as references to those instruments or provisions as amended from time to time.

Accordingly the Secretary of State makes these Regulations in exercise of the powers conferred by section 2(2) of that Act, and by sections 19, 21, 29(1) and (7), and 104(2) of the Energy Act 2008<sup>(c)</sup>, as read with paragraph 1A of Schedule 2 to the European Communities Act 1972<sup>(d)</sup>.

*General*

**Citation, commencement and interpretation**

**1.**—(1) These Regulations may be cited as the Storage of Carbon Dioxide (Licensing etc.) Regulations 2010, and come into force on 1st October 2010.

(2) In these Regulations—

- (a) any reference to a numbered section is to that section of the Energy Act 2008;
- (b) any reference to a provision contained in a Schedule includes a reference to a provision having identical legal effect to such a provision; and
- (c) any reference (except in paragraph (4)) to an EU instrument, or a provision of such an instrument, is to that instrument or provision as amended from time to time.

(3) In these Regulations—

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(a) S.I. 2008/301.  
(b) 1972 c. 68; section 2(2) was amended by section 27(1)(a) of the Legislative and Regulatory Reform Act 2006 (c. 51) and by section 3(3) of, and Part 1 of the Schedule to, the European Union (Amendment) Act 2008 (c. 7).  
(c) 2008 c. 32.  
(d) Paragraph 1A of Schedule 2 was inserted by section 28 of the Legislative and Regulatory Reform Act 2006, and amended by S.I. 2007/1388 and by section 3(3) of, and Part 1 of the Schedule to, the European Union (Amendment) Act 2008.

“appraisal term” has the meaning given by regulation 3(2)(a);

“the authority” (except in regulation 9) means the Secretary of State as licensing authority under section 18(2)(a) or section 18(2)(d) or both;

“CO<sub>2</sub>” means carbon dioxide;

“corrective measures plan” has the meaning given by regulation 7(6);

“the Directive” means 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(a);

“the Environmental Liability Directive” means Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage(b);

“the ETS Directive” means Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC(c);

“financial security” includes—

- (a) a charge over a bank account or any other asset;
- (b) a deposit of money;
- (c) a performance bond or guarantee;
- (d) an insurance policy;
- (e) a letter of credit;

“general exploration licence” means any licence granted by the authority under section 18(1) which authorises only activities within section 17(2)(c) and the establishment or maintenance of an installation in a controlled place for the purpose of such activities and which—

- (a) does not grant to the holder or holders the sole right to carry out exploration of a controlled place, and
- (b) is issued in combination with—
  - (i) a licence under section 4 to explore any controlled place with a view to carrying on activities within section 2(3)(a) to (d) and establish or maintain an installation in a controlled place for the purposes of such exploration, or
  - (ii) a licence under section 3 of the Petroleum Act 1998(d) to search for petroleum in any area below the low water line or in the seaward areas as defined by regulation 3(1)(a) of the Petroleum (Production) (Seaward Areas) Regulations 1988(e);

“injection” means injection of CO<sub>2</sub> into a storage site;

“legislation” means legislation in force in the United Kingdom (whether passed, or made, before or after the commencement of these Regulations);

“licence” (except in regulation 9) means a licence (other than a general exploration licence) granted by the authority under section 18(1) in respect of—

- (a) activities within section 17(2)(a) to (c) and a controlled place which is not in, under or over the territorial sea adjacent to Scotland, or

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(a) OJ No L 140, 5.6.2009, p 114.

(b) OJ No L 143, 30.4.2004, p 56; amended by European Parliament and Council Directives 2006/21/EC (OJ No L 102, 11.4.2006, p 15) and 2009/31/EC.

(c) OJ No L 275, 25.10.2003, p 32; amended by European Parliament and Council Directives 2004/101/EC (OJ No L 338, 13.11.2004, p 18), 2008/101/EC (OJ No L 8, 13.1.2009, p 3) and 2009/29/EC (OJ No L 140, 5.6.2009, p 63), and by Regulation (EC) No 219/2009 of the European Parliament and of the Council of 11 March 2009 (OJ No L 87, 31.3.2009, p 109).

(d) 1998 c. 17.

(e) S.I. 1988/1213; regulation 3(1)(a) and Schedule 1 were amended by S.I. 1992/2378; there are other amendments to the instrument that are not relevant to these Regulations.

(b) the establishment or maintenance in a controlled place which is not in, under or over the territorial sea adjacent to Scotland of an installation for the purposes of activities within section 17(2),

(and “licence holder” is to be construed accordingly);

“licensed area” means the area within which activities are authorised under the licence;

“monitoring plan” has the meaning given by regulation 7(5);

“operator”, in relation to a storage permit, means the person who carries on or (where different) controls activities at the storage site;

“post-closure plan” has the meaning given by regulation 13(3) or (4);

“provisional post-closure plan” has the meaning given by regulation 13(2);

“storage permit” means a consent granted under a licence, authorising the use of a place as a storage site;

“target date” has the meaning given by regulation 11(3)(a).

(4) The following expressions have the meanings given by Article 3 of the Directive (and cognate expressions are to be construed accordingly)—

“closure” (in relation to a storage site);

“corrective measures”;

“CO<sub>2</sub> plume”;

“CO<sub>2</sub> stream”;

“exploration”;

“hydraulic unit”;

“leakage”;

“migration”;

“significant irregularity”;

“significant risk”;

“storage complex”;

“storage site”;

“substantial change”;

“waste”;

“water column”.

### *Licences*

#### **Limitation on licensing powers**

2. A licence may not be granted for the purpose of storing CO<sub>2</sub> in the water column.

#### **Applications for a licence**

3.—(1) An application for a licence must be—

(a) made in writing and sent to the Department of Energy and Climate Change, and

(b) accompanied by a fee of £ 2,100.

(2) The application must include—

(a) a request that the licence specify a period (the “appraisal term”) during which the licence holder has the right to explore the licensed area before making an application for a storage permit, or

- (b) if no such period is requested, a statement of the reasons why such exploration is not considered necessary.

#### **Appraisal term or initial term**

4.—(1) The appraisal term may not exceed the period necessary to—

- (a) generate the information necessary to select a storage site, and
- (b) prepare the documents required for an application under regulation 6.

(2) Subject to paragraph (1), the appraisal term may be extended by the authority at the written request of the licence holder, under the conditions laid down by the licence, provided that the authority is satisfied that any exploration so far carried out has been in accordance with the licence.

(3) If the licence does not include an appraisal term—

- (a) the licence must specify a period as the “initial term” for the purpose of paragraph (4)(a), but
- (b) that initial term may be extended under the conditions laid down by the licence.

(4) The licence expires (unless sooner terminated in accordance with its provisions)—

- (a) at the end of the appraisal term or the initial term, if no application for a storage permit is made before that date, or
- (b) if such an application is refused, when that refusal is notified to the licence holder.

#### **Content of a licence**

5. A licence must include the provisions contained in Schedule 1.

#### *Storage permits*

#### **Applications for a storage permit**

6.—(1) The licence holder may, under the conditions laid down by the licence, apply to the authority for a storage permit in respect of a storage site within the licensed area.

(2) Where the licence includes an appraisal term, the application may not be made unless the exploration required by the licence has been completed, and all other terms and conditions of the licence have been complied with.

(3) An application must contain at least the following—

- (a) the name and address of the proposed operator;
- (b) evidence of the matters referred to in regulation 7(1)(a) to (d);
- (c) in relation to the CO<sub>2</sub> that is to be contained within the storage site—
  - (i) the total quantity that is to be injected and stored;
  - (ii) a proposed date on which injection is to commence;
  - (iii) the prospective sources and transport methods;
  - (iv) the composition of the CO<sub>2</sub> streams that are to be injected;
  - (v) the proposed injection rates and pressures;
  - (vi) the proposed location of the injection facilities;
- (d) a description of measures to prevent any significant irregularities;
- (e) a proposed monitoring plan drawn up in accordance with Annex II to the Directive and that takes into account the obligations imposed on the operator under legislation implementing Article 14 of the ETS Directive;
- (f) a proposed corrective measures plan;

- (g) the proposed provisional post-closure plan drawn up in accordance with regulation 13(1);
  - (h) the information required to be provided in relation to the storage site under legislation implementing Article 5 of Council Directive 85/337/EEC(a);
  - (i) details of financial security that will satisfy the requirements in paragraph 7(1) of Schedule 2, including proof that (if the storage permit is granted) such a security will be in force before the proposed date on which injection is to commence.
- (4) The authority must forward to the European Commission—
- (a) the permit application (within one month after receipt); and
  - (b) any other related material that the authority proposes to take into account in considering the application.

### **Grant of storage permits**

7.—(1) Before granting a storage permit the authority must be satisfied that—

- (a) the storage complex and surrounding area have been sufficiently characterised and assessed in accordance with the criteria set out in Annex I to the Directive,
- (b) no part of the storage complex extends beyond the territories of the member States,
- (c) under the proposed conditions of use of the storage site, there is no significant risk of leakage or of harm to the environment or human health, and
- (d) the conditions in paragraph (3) are met.

(2) For the purposes of paragraph (1)(b), the territory of a member State includes its exclusive economic zone and continental shelf within the meaning of Articles 55 and 76 of the United Nations Convention on the Law of the Sea(b).

(3) The conditions are that the proposed operator—

- (a) is technically competent (including in the operation of environmental management systems), financially sound, and can be relied upon to carry out the functions of an operator, and
- (b) has in place an appropriate programme of professional and technical development and training.

(4) Where more than one proposed storage site is contained within the same hydraulic unit, before granting a storage permit for either site the authority must be satisfied that the requirements for the grant of such a permit can be met simultaneously.

(5) In considering the application for the storage permit the authority may—

- (a) approve the proposed monitoring plan, or
- (b) require the applicant to make such modifications to it as the authority (after consulting the applicant) considers necessary,

and (if the permit is granted) the monitoring plan is the plan as so approved or modified.

(6) In considering the application for the storage permit the authority may—

- (a) approve the proposed corrective measures plan, or
- (b) require the applicant to make such modifications to it as the authority (after consulting the applicant) considers necessary,

and (if the permit is granted) the corrective measures plan is the plan as so approved or modified.

(7) If the authority is minded to grant a storage permit—

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(a) Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment (OJ No L 175, 5.7.1985, p 40); amended by Council Directive 97/11/EC (OJ No L 73, 14.3.1997, p 5) and by European Parliament and Council Directives 2003/35/EC (OJ No L 156, 25.6.2003, p 17) and 2009/31/EC.

(b) Cmnd. 8941.

- (a) the authority must forward a draft of the proposed permit to the European Commission, together with any material taken into consideration that has not already been provided under regulation 6(4); and
- (b) the authority must before granting the permit consider any opinion on the draft that is issued under Article 10(1) of the Directive.

### **Content of storage permits**

- 8.—**(1) A storage permit must include at least the following—
- (a) the name and address of a single person who is a holder of the licence and who is designated as the operator of the storage site;
  - (b) the precise location and delimitation of the storage site and the storage complex, and any relevant information concerning the hydraulic unit;
  - (c) the operational requirements for storage, including—
    - (i) the total quantity of CO<sub>2</sub> authorised to be stored;
    - (ii) the reservoir pressure limits; and
    - (iii) the maximum injection rates and pressures;
  - (d) the provisions relating to acceptance and injection of CO<sub>2</sub>;
  - (e) any other requirements relating to injection and storage that the authority considers necessary, in particular to prevent significant irregularities;
  - (f) requirements designed to prevent any undue interference with other uses of the area surrounding the storage site;
  - (g) the provisions relating to monitoring, including the monitoring plan;
  - (h) the provisions relating to reporting, and notification of leakages and significant irregularities;
  - (i) the provisions relating to notification and implementation of changes, and to review and modification or revocation of the permit;
  - (j) the corrective measures plan, and the provisions relating to corrective measures;
  - (k) the conditions for closure of the storage site;
  - (l) the provisional post-closure plan; and
  - (m) the provisions relating to financial security.
- (2) In this regulation, “provisions” means provisions contained in Schedule 2.

### *Public register*

### **Information to be published on the register**

- 9.—**(1) The information prescribed for the purposes of section 29 is the information to which paragraph (2) applies.
- (2) This paragraph applies to the following information—
- (a) the particulars of each licence and storage permit granted;
  - (b) the particulars of each storage site (including a storage site that has been closed).
- (3) The particulars referred to in paragraph (2)(a) are—
- (a) the terms and conditions of the licence;
  - (b) the names and addresses of all past and present licence holders, including the dates on which they became or ceased to be a licence holder;
  - (c) the names and addresses of all persons (past and present) organising or supervising activities under the licence before the storage permit is granted, including the dates on which they began or ceased to do so;

- (d) the terms and conditions of the storage permit;
  - (e) the names and addresses of all past and present operators under the storage permit, including the dates on which they began or ceased to be the operator;
  - (f) any written opinion received from the Commission under Article 10(1) of the Directive, and any statement of the authority's reasons for departing from that opinion under Article 10(2);
  - (g) any modifications of the terms and conditions of the licence or the storage permit (including the date on which the modification came into effect);
  - (h) where the licence has terminated or been surrendered, the date of such termination or surrender;
  - (i) where the storage permit has been revoked, the date of and reasons for such revocation.
- (4) The particulars referred to in paragraph (2)(b) are—
- (a) the reports, and any notifications, sent to the authority in accordance with the provisions of the storage permit;
  - (b) details of any directions given by the authority in respect of corrective measures or measures for the protection of human health, and of any such measures taken by the operator or by the authority;
  - (c) the current amount of the financial security maintained in accordance with the provisions of the storage permit;
  - (d) where the storage site has been closed—
    - (i) the date of closure;
    - (ii) maps and sections showing the spatial extent of the storage site and storage complex;
    - (iii) the post-closure plan.
- (5) In addition, the Secretary of State may include on the register maintained under section 29(1)—
- (a) any other information that the authority that granted the storage permit considers relevant for assessing whether the CO<sub>2</sub> will be completely and permanently contained in the storage site (but this is subject to section 29(2)), and
  - (b) an estimate by that authority of the total storage capacity of the storage site.
- (6) In this regulation—
- (a) “the authority” means any licensing authority within the meaning of section 18(2);
  - (b) “licence” means a licence granted by the authority under section 18(1); and
  - (c) “licence holder”, “operator” and “storage permit” are to be construed accordingly.

*Powers and duties of the authority*

**Corrective measures**

**10.**—(1) This regulation applies where—

- (a) a significant irregularity or a leakage has been detected, and
- (b) the licence under which the storage permit is granted is still in force,

but does not apply where the storage permit has been revoked.

(2) Without prejudice to the obligations of the operator under paragraph 6 of Schedule 2, or to the powers of the authority under section 24—

- (a) the authority may direct the operator to take any corrective measures (and any measures for the protection of human health) that the authority, after consulting the operator, considers necessary; and

- (b) if the operator fails to take the measures so directed, the authority must exercise its powers under paragraph (4).
- (3) The measures directed to be taken under paragraph (2)(a) may be additional to, or different from, those set out in the corrective measures plan.
- (4) Whether or not a direction has been given under paragraph (2) or under section 24—
  - (a) the authority may at any time take such measures itself (or arrange for another person to take them on the authority’s behalf); and
  - (b) the costs of doing so are to be paid by the operator.
- (5) Section 24(5) to (8) applies to action taken under paragraph (4) as it applies to action taken under section 24(4).

**Review, modification and revocation of storage permit**

- 11.—(1) Where a notification is made under paragraph 4(1) of Schedule 2, the authority—
- (a) may make such modifications to the storage permit as the authority considers appropriate, and
  - (b) must notify the operator of—
    - (i) the date on which any such modifications are to come into effect, and
    - (ii) the date on which the change in question may be implemented.
- (2) However, where it appears to the authority that the matters so notified would amount to a substantial change, the authority must—
- (a) make such modifications to the storage permit as the authority considers appropriate (and make a notification in accordance with paragraph (1)(b)), or
  - (b) notify the operator that the change may not be implemented.
- (3) The authority must make a notification under paragraph (1)(b) or (2) on or before—
- (a) the date (“the target date”) on which the operator proposes to implement a change notified under paragraph 4(1) of Schedule 2, or
  - (b) any later date the authority considers is required in order for it to make such a notification.
- (4) The authority shall notify the operator of a later date pursuant to paragraph (3)(b)—
- (a) no less than one week before the target date, or
  - (b) if one or more later dates have already been notified by the authority pursuant to this paragraph, no less than one week before the date last notified.
- (5) This paragraph applies where the authority becomes aware of—
- (a) any (or any risk of) leakages or significant irregularities;
  - (b) any breach of the terms or conditions of the storage permit; or
  - (c) any scientific finding or technological development which appears to have a bearing on the conduct of operations at the storage site.
- (6) The authority must consider whether to modify or revoke the storage permit—
- (a) where paragraph (5) applies, and
  - (b) in any event, on the date (“the review date”) falling on the fifth anniversary of the grant of the storage permit, and subsequently on every tenth anniversary of the review date.
- (7) Following that consideration, the authority may—
- (a) make such modifications to the storage permit as the authority considers appropriate, or
  - (b) if it decides that modification of the permit would be insufficient in the light of the matters referred to in paragraph (5), revoke the permit.
- (8) Before making any revocation or modification under this regulation, the authority must consult the operator and any other holder of the licence.



## Consequences of revocation of a storage permit

12.—(1) This regulation applies where the authority has revoked the storage permit under regulation 11(7).

(2) The authority must then either—

- (a) close the storage site, or
- (b) consider any application for a new licence (and, if such a licence is granted, for a new storage permit) in respect of the storage site.

(3) Following the procedure under paragraph (2)(b)—

- (a) if no new storage permit is granted, the authority must close the storage site (but the existing licence continues in force);
- (b) if a new storage permit is granted, the existing licence terminates on the date of that grant.

(4) Until the storage site is closed, or the new storage permit is granted, the authority is deemed to be the operator of the site for the purposes of the following obligations—

- (a) in relation to the acceptance and injection of CO<sub>2</sub>;
- (b) in relation to monitoring;
- (c) in relation to corrective measures;
- (d) in relation to the surrender of allowances under legislation implementing the ETS Directive; and
- (e) under legislation implementing Articles 5(1) and 6(1) of the Environmental Liability Directive.

(5) Where the storage site is closed under paragraph (2)(a) or (3)(a), the authority—

- (a) is deemed to be the operator of the storage site for the purposes of the obligations referred to in paragraph (4)(b) to (e), and
- (b) must ensure that the storage site is sealed and the injection facilities removed (but this is without prejudice to the obligations of any person under Part 4 of the Petroleum Act 1998(a)).

(6) The holder of the existing licence must pay to the authority any costs incurred in meeting the authority's obligations under paragraph (4) or (5); and section 24(6) and (7) applies to the recovery of such costs as it applies to the recovery of costs under section 24(5).

(7) In this regulation, "existing licence" means the licence under which the revoked storage permit was granted.

### *Closure of storage site and post-closure period*

#### **Post-closure plan**

13.—(1) Before applying for a storage permit, the licence-holder must draw up a proposed provisional post-closure plan that is—

- (a) based on best practice, and
- (b) in accordance with Annex II to the Directive.

(2) Before granting a storage permit, the authority must—

- (a) approve that proposed plan, or
- (b) require the operator to make such modifications to it as the authority (after consulting the operator) considers necessary,

and the provisional post-closure plan is the plan as so approved or modified.

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(a) Section 30 of the Energy Act 2008 applies Part 4 of the Petroleum Act 1998 (c. 17) to carbon storage installations (as defined by section 30(5)).

- (3) The authority may—
- (a) approve a proposed post-closure plan submitted to it for approval in accordance with paragraph 3(1) of Schedule 1, or
  - (b) require the operator to make such modifications to it as the authority (after consulting the operator) considers necessary,

and the post-closure plan is the plan as so approved or modified.

(4) Where the authority is deemed to be the operator in accordance with regulation 12(5), the post-closure plan is the provisional post-closure plan with such modifications as the authority considers necessary.

#### **Post-closure obligations**

14. The closure of the storage site is without prejudice to the obligations of the operator—
- (a) under legislation implementing Articles 5 to 8 of the Environmental Liability Directive, or
  - (b) relating to the surrender of allowances under legislation implementing the ETS Directive.

#### *Environmental Liability Directive*

#### **Environmental Damage (Prevention and Remediation) Regulations 2009**

15. In Schedule 2 to the Environmental Damage (Prevention and Remediation) Regulations 2009(a), after paragraph 10 insert—

“11. The operation of storage sites pursuant to Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide.”.

Date 6th September 2010

*Marland*  
Parliamentary Under Secretary of State  
Department of Energy and Climate Change

## SCHEDULE 1

Regulation 5

### PROVISIONS TO BE INCLUDED IN A LICENCE

#### **Grant of a storage permit**

1. If a storage permit is granted under a licence then, subject to regulation 12, paragraphs 2, 3 and 4 of this Schedule apply in respect of the storage site authorised under that storage permit.

#### **Closure of storage site by the operator**

2.—(1) The operator must close the storage site where the conditions mentioned in regulation 8(1)(k) are met.

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(a) S.I. 2009/153, amended by S.I. 2009/3275 and 2010/587. The Regulations make provision for implementing the Environmental Liability Directive in England, surrounding waters and in marine areas where the United Kingdom has jurisdiction beyond the territorial sea.

- (2) The operator may close the storage site if—
- (a) the consent of the authority has been given following an application under sub-paragraph (3), and
  - (b) any conditions attached to that consent have been met.
- (3) An application for the authority’s consent to the closure of the storage site must—
- (a) be made in writing and sent to the Department of Energy and Climate Change, and
  - (b) contain the reasons why the operator proposes to close the storage site.
- (4) However, a storage site may not be closed under sub-paragraph (1) or (2) until the terms of the post-closure plan have been determined under regulation 13(3).

### **Post-closure plan**

3.—(1) Prior to the closure of the storage site in accordance with paragraph 1(1) or (2) of this Schedule, the operator must submit a proposed post-closure plan to the authority for approval.

(2) That proposal must be based on the provisional post-closure plan, subject to any modifications proposed by the operator.

(3) In deciding whether to propose any such modifications, the operator must take into account—

- (a) an analysis of the relevant risks;
- (b) current best practice; and
- (c) any improvements in the available technology.

### **Post-closure obligations**

4.—(1) After the storage site has been closed and until the licence is terminated, the operator must continue to—

- (a) monitor the storage site in accordance with paragraph 2 of Schedule 2,
- (b) comply with its reporting and notification obligations in accordance with paragraph 3 of Schedule 2 (with the exception of sub-paragraph (5)(b)), and
- (c) comply with its obligations to take corrective measures in accordance with paragraph 6 of Schedule 2.

(2) However, for those purposes any reference to the monitoring plan or the corrective measures plan is to be read as a reference to the post-closure plan.

(3) The operator must seal the storage site and remove the injection facilities in accordance with its obligations under Part 4 of the Petroleum Act 1998.

### **Extraction of stored CO<sub>2</sub>**

5. The operator must not (and must not permit any other person to) extract stored CO<sub>2</sub> from the storage site except with the prior written consent of the authority and in accordance with any conditions subject to which any such consent is given.

## **SCHEDULE 2**

Regulation 8(2)

### **PROVISIONS TO BE INCLUDED IN A STORAGE PERMIT**

#### **Acceptance and injection of CO<sub>2</sub>**

1.—(1) In order to be injected into the storage site the CO<sub>2</sub> stream must consist overwhelmingly of carbon dioxide, and must in particular satisfy the conditions in sub-paragraph (2).

- (2) The stream—
- (a) must contain no waste or other matter added for the purposes of disposal;
  - (b) may contain incidental or trace substances (to the extent permitted by any legislation applicable to those substances), but only if the concentrations of all such substances are below the levels that would—
    - (i) adversely affect the integrity of the storage site or the relevant transport infrastructure, or
    - (ii) pose a significant risk to the environment or human health.
- (3) In sub-paragraph (2)—
- (a) “incidental substance” means a substance which has become associated with the CO<sub>2</sub> either at its original source or as a result of the process of capture or injection; and
  - (b) “trace substance” means a substance which has been added to the CO<sub>2</sub> in order to assist in the monitoring and verifying of its migration after injection.
- (4) Before accepting and injecting the stream the operator must ensure that the conditions in sub-paragraphs (1) and (2) can be met, by carrying out—
- (a) an analysis of the composition of the stream, and in particular of any corrosive substances that may be present in it, and
  - (b) an assessment of the risk that the stream will fail to comply with those conditions.
- (5) The operator must maintain a register, at a place and in a manner approved by the authority, of the quantities and properties of the CO<sub>2</sub> streams that have been delivered to, and injected in, the storage site (including the composition of those streams).

## Monitoring

2.—(1) The operator must carry out a programme of monitoring of the storage complex and injection facilities, for the purposes specified in sub-paragraph (3).

(2) Such monitoring must include (where possible) the monitoring of the CO<sub>2</sub> plume, and (where appropriate) of the surrounding environment.

(3) The purposes are—

- (a) the comparison of the actual and modelled behaviour of the CO<sub>2</sub> (and the naturally-occurring formation water) in the storage site;
- (b) the detection of any significant irregularities;
- (c) the detection of any migration of CO<sub>2</sub>;
- (d) the detection of any leakage of CO<sub>2</sub>;
- (e) the detection of any significant adverse effects on the surrounding environment, and in particular on—
  - (i) drinking water,
  - (ii) human populations, and
  - (iii) users of the surrounding biosphere;
- (f) the assessment of the effectiveness of any corrective measures taken;
- (g) updating the assessment of the safety and integrity, both short- and long-term, of the storage complex (including the assessment of whether the stored CO<sub>2</sub> will be completely and permanently contained).

(4) The monitoring must be based on the monitoring plan.

(5) The monitoring plan must be updated in accordance with Annex II to the Directive, and in any event within five years of the approval of the original plan, in order to take account of—

- (a) changes to the assessed risk of leakage;
- (b) changes to the assessed risks to the environment and human health;

- (c) new scientific knowledge; and
  - (d) improvements in best available technology.
- (6) The updated plan must be submitted for approval by the authority.
- (7) The authority may—
- (a) approve that plan, or
  - (b) require the operator to make such modifications to it as the authority (after consulting the operator) considers necessary,

and the updated monitoring plan is the plan as so approved or modified.

(8) Sub-paragraphs (5) to (7) apply to the further updating of an updated plan as they apply to the updating of the original plan.

### **Reporting, and notification of leakages and significant irregularities**

3.—(1) The operator must send to the authority a report in respect of each reporting period, containing the information specified in sub-paragraph (5).

(2) The report must be sent to the authority no later than four weeks after the end of the relevant reporting period.

(3) Unless the authority determines otherwise under sub-paragraph (4), the reporting periods are the period of one year beginning with the commencement of injection, and each subsequent yearly period.

(4) At any time before the commencement of injection, or during a current reporting period, the authority may notify the operator that (beginning with the next reporting period) reporting periods are to be a period of less than one year that is specified in the notice.

(5) The information is—

- (a) the results of the monitoring carried out under paragraph 2 of this Schedule (including details of the monitoring technology employed);
- (b) the quantities, properties and composition of the CO<sub>2</sub> streams registered by the operator under paragraph 1(5) of this Schedule;
- (c) proof that the financial security required by paragraph 7 of this Schedule has come into effect and remains in force;
- (d) any other information requested by the authority that the authority considers relevant for the purposes of assessing compliance with the conditions of the storage permit or for increasing knowledge of the behaviour of the CO<sub>2</sub> stored at the storage site.

(6) If the operator becomes aware of any leakages or significant irregularities, the operator must immediately notify the authority.

(7) If the operator becomes aware of any leakages, or of any significant irregularities which imply the risk of leakage, the operator must immediately notify the person who is the regulator in relation to the storage site for the purposes of legislation implementing the ETS Directive.

### **Notification and implementation of changes**

4.—(1) The operator must notify the authority of any change planned in the operation of the storage site, including any change concerning the operator.

(2) A notification under sub-paragraph (1) must specify the target date.

(3) Except where sub-paragraph (4) applies, such a notification must be made at least three months before the target date.

(4) If the change solely concerns the operator, the notification must be made at least four weeks before the target date.

(5) The change may not be implemented before the later of—

- (a) the target date, or any date notified under regulation 11(4)(b); and

(b) the date notified by the authority in accordance with regulation 11(1)(b)(ii).

(6) The change may not be implemented if the authority makes a notification to that effect under regulation 11(2)(b).

(7) However, notwithstanding sub-paragraphs (5) and (6), the change may be implemented on or after the later of the dates mentioned in sub-paragraph (5)(a) if the authority has not before then made a notification under regulation 11(1)(b)(ii) or (2)(b).

### **Review, and modification or revocation of the permit**

5. The permit is to be reviewed, and where necessary modified or (as a last resort) revoked, by the authority in accordance with regulation 11.

### **Corrective measures**

6.—(1) If the operator becomes aware of any leakages or significant irregularities, the operator must take the necessary corrective measures and measures for the protection of human health.

(2) The measures taken must include those set out in the corrective measures plan (but this is subject to regulation 10(3)).

### **Financial security**

7.—(1) The operator must maintain financial security that—

- (a) is of an amount (“the secured amount”) sufficient to ensure that the obligations specified in sub-paragraph (5) can be met,
- (b) is in force before the commencement of injection, and
- (c) remains in force until the licence is terminated.

(2) However, if the storage permit is revoked the security must remain in force—

- (a) until a new storage permit is granted, or
- (b) if the storage site is closed following such revocation, until the licence is terminated.

(3) Following each report made by the operator in accordance with paragraph 3(1) to (5) of this Schedule, the authority is to assess whether the secured amount is appropriate in the light of—

- (a) the assessed risk of leakage, and
- (b) the estimated costs of meeting the obligations specified in sub-paragraph (5).

(4) If, following that assessment, the authority decides that the secured amount is to be adjusted—

- (a) the authority must notify the operator of the new amount that is required, and
- (b) where the secured amount is less than that new amount, the operator must ensure that it is increased to the new amount within three months of receiving that notification.

(5) The obligations are—

- (a) all obligations of the operator arising under the storage permit, including those arising in respect of the closure of the storage site and during the period between such closure and the termination of the licence;
- (b) the obligation to pay the authority’s costs under regulation 10(4)(b) or 12(6); and
- (c) any obligations of the operator arising in respect of the storage site under legislation implementing the ETS Directive.

(6) Where the storage permit is revoked—

- (a) the obligations of the operator under this paragraph continue in effect until the licence is terminated, but
- (b) the assessment by the authority under sub-paragraph (3) is to be made at such intervals as the authority may determine.

## EXPLANATORY NOTE

*(This note is not part of the Regulations)*

These Regulations make provision for implementing Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide (“the Directive”). They also make provision for implementing an amendment to Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage (“the Environmental Liability Directive”).

Part 1, Chapter 3, of the Energy Act 2008 (c. 32) (“the Act”) establishes a licensing regime for the storage of carbon dioxide in areas within UK territorial waters, and in areas beyond those waters which have been designated as a Gas Importation and Storage Zone within the meaning of section 1(5) of the Act (“the offshore area”). Section 17 of the Act prohibits the storage of carbon dioxide (with a view to its permanent disposal) except in accordance with a licence granted under section 18. For that purpose, the licensing authority is either the Secretary of State or (for storage within territorial waters adjacent to Scotland) the Scottish Ministers. With the exception of regulation 9, these Regulations relate solely to licences granted by the Secretary of State (“the authority”) for activities which take place in the offshore area (but wholly outside territorial waters adjacent to Scotland) and installations which are in the offshore area (but outside territorial waters adjacent to Scotland). These Regulations do not apply to the category of licence which authorises the exploration of the offshore area generally, by means of such relatively non-intrusive methods such as seismic surveys and shallow drilling. Such licences will be issued in conjunction with the corresponding licences granted under section 4 of the Act and section 3 of the Petroleum Act 1998.

The Directive establishes a legal framework for the environmentally safe storage of carbon dioxide in underground geological formations, as a means of preventing emissions of carbon dioxide into the atmosphere and thereby combating climate change. These Regulations implement the requirements of the Directive concerning: (1) the licensing of carbon dioxide storage (and related exploration activities); (2) the obligations of the storage operator (for example in relation to monitoring, reporting and corrective measures) whilst storage activities are taking place; and (3) the operator’s continuing obligations for a period after the closure of the store until the licence is terminated. The subsequent transfer of liabilities from the operator to the authority, on termination of the licence, is to be the subject of a separate instrument. Until the provisions of the Act are extended to cover the entire territory of the United Kingdom, both onshore (including internal waters) and offshore, the requirements of the Directive are implemented with respect to storage within the offshore area only. Again, such an extension is to be made by a separate instrument.

*Regulation 1(3) and (4)* provides definitions for terms used in the Regulations. For the most part, the terminology followed coincides with that of the Directive, and the Directive definitions are incorporated accordingly. However, in these Regulations the “exploration permit” referred to in the Directive becomes the “appraisal term” of a licence granted under the Act; and the “storage permit” becomes a consent to carry on the relevant storage activities granted under the provisions of such a licence.

*Regulation 2* prevents the licensing of carbon dioxide storage in the water column. The power of the Secretary of State to grant licences under section 18(1) of the Act is accordingly expressly limited by this regulation (see the definition of “licence” in regulation 1(3)).

*Regulation 3* sets out the requirements for applying for a licence. The application may be for a licence with, or without, an “appraisal term” (during which the holder will have the right to carry on exploration activities with view to selecting a site for carbon dioxide storage). If an application is made for a licence without an appraisal term, reasons must be given in the application.

*Regulation 4(1) and (2)* limits the length of the appraisal term to the minimum necessary. By *regulation 4(3)*, a licence without an appraisal term must instead have an “initial term”; any application by the licence holder for a permit to store carbon dioxide must be made before the end of the appraisal term or (as the case may be) the initial term.

*Regulation 5* requires a licence to include the provisions set out in *Schedule 1*.

*Regulation 6* sets out requirements for an application for a permit to store carbon dioxide.

*Regulation 7* sets out conditions for the grant of a storage permit, and *regulation 8* sets out minimum requirements for the content of such permits. In particular, a storage permit must designate a single licence holder as the operator of the storage site, provide details of the storage site and surrounding complex, and of the operational requirements for injection and storage. Also to be included are the provisions set out in *Schedule 2*.

*Regulation 9* prescribes the information to be included on the public register maintained under section 29 of the Act. This will be information about storage licences and storage permits, and about storage sites both before and after the closure of the site. The register is maintained by the Secretary of State, but will include information about all storage sites licensed under section 18 of the Act; it will therefore include information about licences and permits granted by the Scottish Ministers (and about the corresponding storage sites).

*Regulation 10* enables the licensing authority to direct the operator to take corrective measures, in the event of a significant irregularity or leakage, and enables (or in some cases requires) the authority to take such measures itself and to recover the costs from the operator. This is in addition to the operator’s obligations to take corrective measures under the storage permit, and to the authority’s powers under section 24 of the Act (which allow directions to be given following the breach of a licence). Such measures also include measures for the protection of human health.

*Regulation 11* enables the licensing authority to modify or revoke the storage permit in certain circumstances. By *regulation 11(1)* such a modification may be made where a change is planned by the operator, and by *regulation 11(2)* a modification must be made where the change appears to the authority to be substantial; alternatively in such a case the authority may prohibit the change. (Such planned changes are required to be notified under *paragraph 4* of *Schedule 2*.) *Regulation 11(5) and (6)* sets out circumstances in which the authority must consider whether to modify or revoke the permit. This duty arises where the authority receives certain information – for instance that permit conditions have been breached or that there have been leakages or significant irregularities – and in any event five years after the grant of the permit (and then every ten years).

*Regulation 12* deals with the consequences of a storage permit being revoked. The authority may either close the storage site immediately, or first consider applications for a new licence and a new storage permit in respect of the site. If a new storage permit is granted, the existing licence terminates and with it the previous operator’s obligation to meet the authority’s costs. In all other cases that obligation continues in respect of the store that is now closed, but the authority takes over responsibility for performing the post-closure obligations.

Before a site is closed, the definitive version of a “post-closure plan” must be approved by the authority under *regulation 13*.

*Regulation 14* deals with liabilities of the operator after the site has been closed. Its obligations to remedy environmental damage under the Environmental Liability Directive will continue, as will those to surrender allowances under the greenhouse gas emission trading scheme established by Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003. Such obligations continue until the licence is terminated, as does the obligation to maintain a financial security (see *paragraph 7* of *Schedule 2*).

*Regulation 15* amends the Environmental Damage (Prevention and Remediation) Regulations 2009 (S.I. 2009/153), which implement the Environmental Liability Directive in England, surrounding waters and in marine areas where the United Kingdom has jurisdiction beyond the territorial sea.



*Schedule 1* contains provisions which must be included in any licence granted by the authority. These are provisions concerning the circumstances in which the storage site is to be closed by the operator, the preparation of the post-closure plan and the liabilities of the operator after the site has been closed. Closure takes place either under the conditions laid down in the storage permit, or on application to the authority (*paragraph 2*). The proposed post-closure plan submitted by the operator to the authority for approval must be based on the provisional version that was approved when the storage permit was granted, updated as necessary (*paragraph 3*). The operator must continue to monitor the site, and to comply with its reporting and notification obligations and its obligations to take corrective measures (*paragraph 4*). The operator must seal the site and remove the injection facilities in accordance with its decommissioning obligations under Part 4 of the Petroleum Act 1998 (c. 17) (*paragraph 4*).

*Schedule 2* contains provisions which must be included in any storage permit granted by the authority. These are provisions concerning: the composition of the carbon dioxide streams that may be injected into the store, including the obligation of the operator to maintain a register of the quantities and properties of the streams injected (*paragraph 1*); the monitoring of the storage complex and injection facilities, including the drawing up and approval of a monitoring plan (*paragraph 2*); the submission of periodic reports on monitoring, injection, financial security, and any other information that the authority considers relevant, and the notification of leakages or significant irregularities (*paragraph 3*); the notification and implementation of changes concerning the operator or the operation of the storage site (*paragraph 4*); the review and modification or revocation of the permit (*paragraph 5*); the measures that are to be taken in the event of leakages or significant irregularities (*paragraph 6*); and the financial security that is to be maintained by the operator (*paragraph 7*).

As *regulation 1(2)(b)* makes clear, it is not necessary for the provisions included in a licence or storage permit to be verbally identical to the specified provisions, as long as they have the same legal effect.

An Impact Assessment has been prepared, and is available on the website of the Department of Energy and Climate change at:

[http://www.decc.gov.uk/en/content/cms/consultations/co2\\_storage/co2\\_storage.aspx](http://www.decc.gov.uk/en/content/cms/consultations/co2_storage/co2_storage.aspx)

A Transposition Note setting out how these Regulations implement the relevant provisions of the Directive is annexed to the Explanatory Memorandum that is available alongside the instrument on the OPSI website at: <http://www.opsi.gov.uk/stat.htm>

Copies of the Impact Assessment and Transposition Note are also available from Ricki Kiff, Energy Development Unit, Department of Energy and Climate Change, 3 Whitehall Place, London SW1A 2AW. Tel: 0300 068 6042; email: [ricki.kiff@decc.gsi.gov.uk](mailto:ricki.kiff@decc.gsi.gov.uk).

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STATUTORY INSTRUMENTS

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**2010 No. 2221**

**ENVIRONMENTAL PROTECTION**

The Storage of Carbon Dioxide (Licensing etc.)  
Regulations 2010

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