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8 Characterization of the wastes and their constituents shall take into account:

- 1 origin, total amount, form and average composition;
- 2 properties: physical, chemical, biochemical and biological;
- 3 toxicity;
- 4 persistence; physical, chemical and biological; and
- 5 accumulation and biotransformation in biological materials or sediments.

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4.1 Proper characterization of the carbon dioxide injection stream is essential. If the stream is so poorly characterized that proper assessment cannot be made of its potential impacts on human health and the environment, that stream shall not be dumped. Additionally, individual carbon stream components could have practical impacts on carbon dioxide transport and storage, as well as potential health, safety and environmental impacts. Annex 2 should be applied as appropriate when considering the use of alternatives, and in the reduction of the overall carbon dioxide stream volume and serve as a basis for a decision as to whether carbon dioxide stream may be dumped.

4.2 Specific characterization of the carbon dioxide stream shall take into account the potential for chemical, physical, or biological interactions among stream components, as well as the stream as a whole. This should include:

- 1 origin, total amount, form and average composition;
- 2 properties: physical, chemical, biochemical and biological;
- 3 toxicity;
- 4 persistence; physical, chemical and biological; and
- 5 accumulation and/or biotransformation within biological materials or marine sediments.

#### ACTION LIST

(EDITORIAL NOTE: Policy/legal input and further discussion is needed to determine how to apply the Action List approach to CO2 streams. The presence of brackets in this section reflects the need for additional input and further discussion.)

5.1 The Action List provides a screening mechanism for determining whether a carbon dioxide stream is considered acceptable for disposal into sub-sea geological formations. It constitutes a crucial part of Annex 2 to the 1996 Protocol and the Scientific Group will continuously review all aspects of it to assist Contracting Parties with its application. It may also be used in meeting the requirements of Annexes I and II to the London Convention 1972.

5.2 The composition of the injection stream should be overwhelmingly carbon dioxide, consistent with the primary purpose of mitigating greenhouse gas emissions - need language from legal group]

5.3 Each Contracting Party shall develop a national Action List to provide a mechanism for screening candidate wastes and their constituents on the basis of their potential effects on human health and the marine environment. In selecting substances for consideration in an Action List, priority shall be given to toxic, persistent and bioaccumulative substances from anthropogenic sources (e.g., cadmium, mercury,

4.1 注入される二酸化炭素流の特性の適切な把握は必須である。もし二酸化炭素流特性の把握が不十分であるために、ヒトの健康及び環境に対する潜在的な影響について適切な検討を行うことができないような場合には、当該二酸化炭素流を投棄してはならない。さらに、健康、安全、そして環境への潜在的な影響に加え、個々の二酸化炭素流構成物質による、二酸化炭素の輸送や貯留を要する上での影響が存在する。代替手段の検討、及び、二酸化炭素流の総量を削減する際には、附属書2を適切に適用するものとし、二酸化炭素流が投棄できるかどうかを判断する基準とするものとする。

4.2 二酸化炭素流の具体的な特徴づけ(特有の特性把握)には、二酸化炭素流全体としての特性に加え、その構成物質間の化学的、物理的、生物学的相互作用を考慮しなければならぬ。把握すべき特性には以下の事項を含むものとする。

- 1 起源、総量、形態及び平均的な組成
- 2 物理的、化学的、生化学的、及び生物学的性質
- 3 毒性
- 4 物理的、化学的及び生物学的持続性
- 5 生物又はたい積物中における蓄積及び生物学的な変性

#### 5 行動基準

(編集注: 二酸化炭素流に対する行動基準の適用方法を決定するには、政策的・法的考察と更なる議論が必要である。この章におけるブラケットの存在は、追加的な考察とさらなる議論の必要性を反映するものである。)

5.1 行動基準は、二酸化炭素流が海底下地質層への処分を認められるかを決定するための評価メカニズムを提供する。同基準は締結者附属書2の最も重要な部分をなしており、科学者グループ会合は、そのあらゆる面を継続的に見直し、締結国の同リスト適用を支援する。また、同基準はロンドン条約附属書I及びIIの要請にも活用される。

5.2 注入流の組成は、温室効果ガス排出削減という、当初の目的と一致させるため、圧力的に二酸化炭素であるべきである。 - 法的グループからの用語が必要]

5.3 各締結国は、人の健康及び海洋環境に対する潜在的な影響に基づいて、投棄が検討される廃棄物及びその構成物を評価するための機構を提供するために、国の行動基準を作成しなければならない。同基準において評価する物質を選択するに当たっては、人間の活動により影響を受ける発生源からの毒性及び持続性を有し、生体に蓄積する物質(例えば、カドミウム、水銀、有機ハロゲン、石油炭化水素、



<p>18 Guidance for procedures to be followed in dump-site selection can be found in a report of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP Reports and Studies No. 16 - Scientific Criteria for the Selection of Waste Disposal Sites at Sea). Prior to selecting a dump-site, it is essential that data be available on the oceanographic characteristics of the general area in which the site is to be located. This information can be obtained from the literature but field work should be undertaken to fill the gaps. Required information includes:</p> <ol style="list-style-type: none"><li>1. the nature of the seabed, including its topography, geochemical and geological characteristics, its biological composition and activity, and prior dumping activities affecting the area;</li><li>2. the physical nature of the water column, including temperature, depth, possible existence of a thermocline/pycnocline and how it varies in depth with season and weather conditions, tidal period and orientation of the tidal ellipse, mean direction and velocity of the surface and bottom drifts, velocities of storm-wave induced bottom currents, general wind and wave characteristics, and the average number of storm days per year, suspended matter; and</li><li>3. the chemical and biological nature of the water column, including pH, salinity, dissolved oxygen at surface and bottom, chemical and biochemical oxygen demand, nutrients and their various forms and primary productivity.</li></ol>	<p>19 Some of the important amenities, biological features and uses of the sea to be considered in determining the specific location of the dump-site are:</p> <ol style="list-style-type: none"><li>1. the shoreline and bathing beaches;</li><li>2. areas of beauty or significant cultural or historical importance;</li><li>3. areas of special scientific or biological importance, such as sanctuaries;</li></ol>
<p>6.3 The following are important considerations in selecting a sub-seabed geological formation for the disposal of carbon dioxide streams from carbon dioxide capture processes:</p> <ol style="list-style-type: none"><li>1. storage capacity and injectivity of the geological formation;</li><li>2. storage integrity of the geological formation;</li><li>3. the surrounding geology;</li><li>4. potential migration and leakage pathways over time; and potential effects of leakage of CO<sub>2</sub></li><li>6. monitoring requirements</li></ol> <p>6.4 A significant amount of data will be needed to establish both the feasibility of a CO<sub>2</sub> injection site and also to provide evidence of the integrity of the site. Most data will be integrated into geological models that will be used to simulate and predict the performance of the site.</p> <p>6.5 Some of the important amenities, biological features and uses of the sea to be considered in determining the specific location of the site are:</p> <ol style="list-style-type: none"><li>1. the shoreline and bathing beaches;</li><li>2. areas of beauty or significant cultural or historical importance;</li><li>3. areas of special scientific or biological importance, such as sanctuaries;</li></ol>	<p>6.3 以下の点は、二酸化炭素回収工程からの二酸化炭素流を処分するための海底下地質累層の選択に際して、重要な検討事項である。</p> <ol style="list-style-type: none"><li>1. 地質累層の貯留容量と注入性</li><li>2. 地質累層の貯留の完全性（密閉性？）</li><li>3. 周辺の地質</li><li>4. 二酸化炭素流の経年の移動及び漏洩の潜在的経路、及び、漏洩による潜在的影響</li><li>6. 監視要件（注：番号は原文の6の「v」）</li></ol> <p>6.4 二酸化炭素注入地点の利用可能性と、さらにサイトの完全性（密閉性）を証拠づけるためには、相当量のデータが必要となる。ほとんどのデータは、地理的モデルへと統合され、サイト性能のシミュレーションと予測に利用される。</p> <p>6.5 特定の場所の位置を決定するに際しては、次の重要なアメニティー、生物学的特徴及び海の使用に考慮しなければならない。</p> <ol style="list-style-type: none"><li>1. 海岸線及び砂浜</li><li>2. 景観地または著しく文化的または歴史的に重要な地域</li><li>3. 保護区域のように特別な科学的または生物学的重要性のある地域</li></ol>

	<p>21 In order to assess the capacity of a site, especially for solid wastes, the following should be taken into consideration:</p> <ol style="list-style-type: none"> <li>1. the anticipated loading rates per day, week, month or year;</li> <li>2. whether or not it is a dispersive site; and</li> <li>3. the allowable reduction in water depth over the site because of mounding of material.</li> </ol> <p>Evaluation of potential impacts</p> <p>22 An important consideration in determining the suitability of a waste for dumping at a specific site is the degree to which this results in increased exposures of organisms to substances that may cause adverse effects.</p>	<p>Evaluation of potential impacts</p> <p>6.7 An important consideration in determining the suitability of a carbon dioxide stream for disposal at a specific site is the degree to which potential leakage from this sub-seabed geological formation may result in increased exposures of organisms to substances that may cause adverse effects.</p>	
	<p>Site capacity</p> <ol style="list-style-type: none"> <li>1. it should be large enough, unless it is an approved dispersion site, to have the bulk of the material remain either within the site limits or within a predicted area of impact after dumping;</li> <li>2. it should be large enough to accommodate anticipated volumes of solid waste and/or liquid wastes to be diluted to near background levels before or upon reaching site boundaries;</li> <li>3. it should be large enough in relation to anticipated volumes for dumping so that it would serve its function for many years; and</li> <li>4. it should not be so large that monitoring would require undue expenditure of time and money.</li> </ol>	<p>Capacity of the sub-seabed geological formation</p> <p>6.6 Capacity of the sub-seabed geological formation is an important consideration for the following reasons:</p> <ol style="list-style-type: none"> <li>1. the capacity should be large enough to have the total anticipated volume of the carbon dioxide stream remain within the sub-seabed geological formation;</li> <li>2. the capacity should be large enough in relation to anticipated volumes for disposal so that it would serve its function for many years; and</li> <li>3. the characteristics of the site should make monitoring feasible without undue expenditure of time and money.</li> </ol>	<p>海底下地質累層の収容量</p> <p>6.6 海底下地質累層の収容量は、以下の理由から重要な検討項目である。</p> <ol style="list-style-type: none"> <li>1. 収容量は、予定する二酸化炭素流の全容量が海底下地質累層に留まるだけ十分に大きくなければならない。</li> <li>2. 収容量は、長年にわたり機能を果たすように、処分される予定容量に対して十分な大きさであるべきである。</li> <li>3. サイトの特性は、適度な時間及び費用を費やさず監視を可能にするものであること。</li> </ol>
	<p>Size of the dump-site</p> <p>20 Size of the dump-site is an important consideration for the following reasons:</p> <ol style="list-style-type: none"> <li>1. it should be large enough, unless it is an approved dispersion site, to have the bulk of the material remain either within the site limits or within a predicted area of impact after dumping;</li> <li>2. it should be large enough to accommodate anticipated volumes of solid waste and/or liquid wastes to be diluted to near background levels before or upon reaching site boundaries;</li> <li>3. it should be large enough in relation to anticipated volumes for dumping so that it would serve its function for many years; and</li> <li>4. it should not be so large that monitoring would require undue expenditure of time and money.</li> </ol>	<p>Capacity of the sub-seabed geological formation</p> <p>6.6 Capacity of the sub-seabed geological formation is an important consideration for the following reasons:</p> <ol style="list-style-type: none"> <li>1. the capacity should be large enough to have the total anticipated volume of the carbon dioxide stream remain within the sub-seabed geological formation;</li> <li>2. the capacity should be large enough in relation to anticipated volumes for disposal so that it would serve its function for many years; and</li> <li>3. the characteristics of the site should make monitoring feasible without undue expenditure of time and money.</li> </ol>	<p>漁場</p> <ol style="list-style-type: none"> <li>4. 産卵、育成、加入水域</li> <li>5. 回遊経路</li> <li>6. 季節的及び重要な生息場</li> <li>7. 航路</li> <li>8. 軍事演習地域</li> <li>9. 鉱業、海底ケーブル、淡水化及びエネルギー転換所を含む海底の工業的使用</li> </ol>
	<p>4 fishing areas;</p> <ol style="list-style-type: none"> <li>5 spawning, nursery and recruitment areas;</li> <li>6 migration routes;</li> <li>7 seasonal and critical habitats;</li> <li>8 shipping lanes;</li> <li>9 military exclusion zones; and</li> <li>10 engineering uses of the seafloor, including mining, undersea cables, desalination or energy conversion sites.</li> </ol>	<p>4 fishing areas;</p> <ol style="list-style-type: none"> <li>5 spawning, nursery and recruitment areas;</li> <li>6 migration routes;</li> <li>7 seasonal and critical habitats;</li> <li>8 shipping lanes;</li> <li>9 military exclusion zones; and</li> <li>10 engineering uses of the seafloor, including mining, undersea cables, desalination or energy conversion sites.</li> </ol>	