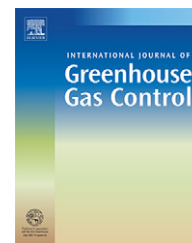


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# Permitting issues for CO<sub>2</sub> capture, transport and geological storage: A review of Europe, USA, Canada and Australia

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## ABSTRACT

The paper reviews the environmental, health and safety permitting/regulatory issues presented by CO<sub>2</sub> capture and storage (CCS) operations across the full project cycle, and reviews existing regulations in the EU, North America and Australia to assess their applicability to CCS, and identify regulatory gaps.

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## 1. Introduction

This paper presents a range of permitting considerations for CO<sub>2</sub> capture and storage (CCS) activities across the full geographical chain of operations (capture → transport → storage → stewardship) and the temporal dimension of the CCS operational life-cycle (planning → construction → operation → decommissioning). The paper highlights some key additional environmental, health and safety regulatory permitting issues associated with each element of the chain across the temporal cycle. It also reviews a selection of existing environmental, health and safety permitting regimes for large-scale infrastructure projects, and considers their appropriateness given the nature of the permitting issues for CCS highlighted. Effective regulation of CCS operations will be critical in ensuring that such activities can proceed in a safe and environmentally sound

manner, and that appropriate responsibilities and liabilities are in place for any impacts associated with CO<sub>2</sub> leakage along the chain, and in particular at storage sites, across the full project life-cycle.<sup>1</sup>

## 2. Permitting issues

The analysis undertaken suggests that the installation of a CO<sub>2</sub> capture plant at a power plant could trigger additional permitting considerations through several new characteristics of the plant, including, inter alia: changes in the overall thermal efficiency of the plant triggered by the energy penalty imposed by the CO<sub>2</sub> capture plant; changes in the exhaust parameters of the plant, which can change the nature of the flue gas plume; changes in the concentration of various

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<sup>1</sup> The study is based on transmission and storage of CO<sub>2</sub> without presence of significantly toxic levels of other contaminants. 1750-5836/\$ – see front matter © 2007 Elsevier Ltd. All rights reserved.  
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