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# Safety climate as an indicator for major accident risk: Can we use safety climate as an indicator on the plant level?

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## Abstract

Measuring safety climate is regarded a proactive approach to safety management. With increased focus on developing indicators for major accidents, there is a need to critically assess the effectiveness of current practices in providing early warning signals for organizations at risk. The main purpose of the present study is to investigate the ability of safety climate tools to assess the risk of major accidents on the plant level. The aim is to take the perspective of decision-makers and ask in what way safety climate surveys can provide managers with warning signals related to organizational conditions for safety. Using data material from the Norwegian offshore oil and gas operations, we have tested whether three major close call incidents could be detected through using safety climate data from the period before the incidents. We examined the problem through testing (1) if the installations in question deviated from the industry average, and (2) if the trends for the installations could reveal that something was wrong. The results are inconclusive; only one of the installations deviates negatively from the industry average one year before the incident, and the trend variations are so small that it is questionable if they would have triggered actions from the management. The challenges when relying on safety climate as a means of managing risk of major accidents on individual installations are discussed.

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Keywords: Major accident risk; Safety climate; Risk indicators; Human and Organizational factors

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## Introduction

Assessing, describing and improving safety climate is commonly regarded as a proactive approach to safety management <sup>(1)</sup>. Ideally, descriptions of safety climate should serve as a means to identify the latent conditions <sup>(e.g.2, 3)</sup> of major accidents, and consequently serve as opportunities to prevent organizational shortcomings from becoming the root causes of

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