ABSTRACT
This paper concerns the development and implementation of a replacement chemistry for 2-butoxyethanol used in fracturing. The new product was synthesized to provide mutual solvency, wettability modification and clay swelling inhibition.

Recently, 2-butoxyethanol has come under scrutiny in North America (e.g. prompting Environment and Health Canada to add it to Schedule 1 of the Canadian Environmental Protection Act). Precautions need to be taken when working with 2-butoxyethanol due to toxicology concerns. Exposure to high levels has led to reported nose and eye irritation, headaches and vomiting.

Introduction of an alternate product has had a profound effect on the stimulation market in Canada. So far, 400,000 kg of the alternative product has replaced an estimated annual usage total of 3 to 4 million kg of 2-butoxyethanol. The new product also has had successful applications in the US, Latin America and Europe.

There has been a significant environmental impact already realized through the use of this alternative product, and there is even greater unrealized potential. Additionally, as a non-regulated product for use and handling, the safety and material handling implications are greatly improved.

This paper details the chemistry of the replacement product, as well as environmental information to support the use of this product as a benign replacement for 2-butoxyethanol. An in-depth description of the laboratory testing used to identify, evaluate and select the appropriate treatment parameters also is given.

The paper concludes with two case histories from northeast Alberta where this product was successfully used as part of a fracture treatment for long, horizontal, multi-zone shale gas plays. Furthermore comparisons are made using 2-butoxyethanol and no mutual solvent chemistry in a fracture treatment. This data shows the clear benefit of using this new chemistry.

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