A Day in the Life of a Production Chemist: Applying Chemistry to Hydraulic Fracturing

Abstract: Hydraulic fracturing is a well stimulation technique whereby mixtures of water, sand and chemical additives are pumped into the wellbore under high pressures to initiate a fracture in hydrocarbon bearing rock such as shale. The chemical formulations used in hydraulic fracturing fluids are critical to the process, and each fluid formulation varies depending on the operator’s field development goals and unit development costs. Optimizing the fluid formulation is necessary in order to reduce costs and improve fracturing efficiency. This presentation will provide examples of what types of chemicals are used in fracturing treatments, the purpose for each chemical, and the steps involved in making the selections including analytical techniques. Case studies from the field will also be used to demonstrate the chemical selection process. The goal is to inform students and faculty on the process of hydraulic fracturing and present examples of how engineers and chemists tackle the daily challenges in this field.

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