

# **Narrative Description of Well Stimulation Regulations (December 31, 2014)**

On September 20, 2013, Governor Brown signed into law Senate Bill 4 (Pavley). SB 4 complements existing rules that require some of the strongest well construction and operation standards in the nation by enacting further safeguards to public health and safety and the environment regarding the practices known as well stimulation.

SB 4 requires a permit from the Department of Conservation (Department), Division of Oil, Gas, and Geothermal Resources (Division) to conduct well stimulation. The permit application must include detailed information about the fluids to be used, a ground water monitoring plan, and a water management plan. Copies of an approved permit must be sent to neighboring property owners and tenants, and water well testing must be provided upon request. SB 4 requires the Division to prepare regulations to ensure that well stimulation is done safely and to require detailed public disclosure about the well stimulation.

On December 30, 2014, the Office of Administrative Law (OAL) approved and filed the final proposed regulations for well stimulation treatments with the Office of the Secretary of State. The text of the final regulations can be found [here](#). The new regulations will go into effect on July 1, 2015.

The adopted regulations are the result of consideration of extensive public input and consultation with other state regulatory agencies. The Department made the proposed regulations and revisions thereto available for public comment from November 15, 2013 until January 14, 2014; from June 13, 2014 until July 28, 2014; and from October 9, 2014 until October 24, 2014. During those public comment periods the Department conducted a total of ten public comment hearings around the state. In addition, as required by SB 4, the Division developed these regulations in consultation with various other state regulatory agencies.

The adopted regulations are intended to supplement the Division's current oil and gas regulatory framework with regulations specific to well stimulation to meet the mandates of SB 4. The adopted regulations satisfy the goals and requirements of SB 4 by setting requirements to ensure integrity of wells, well casings, and the geologic and hydrologic isolation of the oil and gas formation during and following well stimulation treatments; and by requiring full disclosure of the composition and disposition of well stimulation fluids, including hydraulic fracturing fluids, acid well stimulation fluids, and flowback fluids. The adopted regulations satisfy the goals and requirements of SB 4 by implementing express statutory requirements regarding well stimulation permits, public disclosure, neighbor notification, and water well testing. The adopted regulations address the distinction between well stimulation treatment and other routine operations; the distinction between well stimulation and underground injection projects; and the acid concentration threshold at which an acid matrix stimulation treatment is subject to the requirements of SB 4.

Following are summaries of the major concepts and requirements founding the final regulations:



## **1. Evaluation Prior to a Well Stimulation Treatment.**

*Cement Evaluation.* The proposed regulations require an operator to perform a cement evaluation log to demonstrate that the cement outside of the production casing is competent to ensure zonal isolation during and following a well stimulation treatment. Another cement evaluation method may be used if it is capable of demonstrating the adequacy of the cement. If adequate cement coverage and bonding cannot be demonstrated, then the operator must develop a plan for remediating the cement before a well stimulation treatment is performed. Cement evaluation may be waived if the well has cement in place beyond what is required under the applicable well construction regulation, or if the Division is satisfied that past experience with drilling and production in the area has proven that the method of well construction and cementing employed will ensure that there will be no voids in the annular space of the well.

*Pressure Testing.* The proposed regulations require operators to pressure test the well, and the equipment to be used for hydraulic fracturing, prior to commencing a well stimulation treatment. Pressure testing of the well must be performed to a pressure equal to 100 percent of the pressure anticipated during the well stimulation treatment, and pressure testing of the equipment must be performed to 125 percent. If there is a pressure drop of 10 percent or more, then the casing or tubing cannot be used unless the problem is corrected and there has been a successful pressure test. The operator must give the Division at least 24 hours of notice before pressure testing so that the Division will have an opportunity to witness the testing.

*Well Stimulation Treatment Area Analysis.* The proposed regulations require an operator to perform a well stimulation treatment area analysis to demonstrate that there is no potential conduit for fluid to migrate out of the hydrocarbon zone where the well stimulation treatment will occur. Based on modeling approved by the Division, the operator is required to review a three-dimensional area that is twice the anticipated area of the well treatment to verify that there is no well or fault in that area that could act as a conduit for fluid to escape the hydrocarbon zone. The operator must also evaluate faults and other geologic features within an area of five times the anticipated well treatment area to identify any potential conduits. If the area of five times the anticipated well treatment area extends beyond the hydrocarbon zone where the well stimulation treatment will occur, then the operator must also demonstrate that the adjacent geological formations will contain the well stimulation treatment.

*Well Stimulation Treatment Design.* The proposed regulations require an operator to prepare a well stimulation treatment design that demonstrates that the cement evaluation and the well stimulation treatment area analysis have been completed and that the findings have been synthesized and employed.

## **2. Well Stimulation Permit Application.**

SB 4 requires operators to obtain a permit from the Division in advance of performing a well stimulation treatment. Permit applications will be shared with other state regulators to ensure that they have specific information about well stimulation before it occurs.

The permit application includes the following: the identification and location of the well; the time period during which the well stimulation treatment is planned to occur; a water management plan; a list of the anticipated identity and concentration of the chemical constituents of the well stimulation treatment fluids the operator plans to use; modeling of the well stimulation treatment and identification of plugged



and abandoned wells and geologic faults within the modeled treatment area; indication that the operator is developing a groundwater monitoring plan meeting the criteria of the applicable Regional Water Quality Control Board (operations cannot commence unless a plan has been approved); an estimate of treatment-generated waste materials that are not addressed in the water management plan; identification and contact information of the operator; the depth of the base of fresh water; and the results of specified evaluation and modeling.

The Department's proposed regulations make clear that well stimulation treatments must be performed in accordance with the conditions of the permit issued by the Division, and establish the permit process that must be followed by operators.

### **3. Neighbor Notification and Water Testing.**

SB 4 requires operators to hire an independent entity or person to provide notification to every tenant and owner of neighboring property within a specified distance from the wellhead and horizontal projection of a well that will have a well stimulation treatment performed on it. The statute requires operators to provide neighbor notification at least 30 days prior to commencing the well stimulation treatment. Notified property owners may request baseline and follow-up water quality testing at the operator's expense. Neighbor notification must be provided utilizing a bilingual (English/Spanish) template form developed by the Division and distributed in accordance with the detailed guidance provided by the Division. The Regional Water Quality Control Board will be notified in advance of water testing so that it may witness the water sampling.

### **4. Monitoring During a Well Stimulation Treatment.**

The proposed regulations require the operator to monitor the surface injection pressure, the slurry rate, the proppant concentration, the fluid rate, and the pressure of each annuli of the well during a well stimulation treatment for indications that a well breach may have occurred or that fluid is not confined to the intended zone. Further, the proposed regulations specify two thresholds at which the operator must terminate the well stimulation treatment, report the incident to the Division, and conduct diagnostics. The Division must be notified when diagnostics are conducted so that Division staff has an opportunity to witness the diagnostics. If diagnostics indicate that a well breach did occur during well stimulation treatment, then the operator must immediately shut-in the well and isolate the perforated section. In addition, the operator must provide essential information about the event to the Division and the local Regional Water Quality Control Board to facilitate incident response. The information that the operator must provide includes a description of events leading up to the well breach, an exact description of the chemical composition of the fluids in the well at the time of the well breach, an estimate of the volume of fluid lost during the well breach, and available data about the protected water closest to the well breach.

### **5. Seismic Monitoring.**

Tracking of seismic activity during and after well stimulation treatment has been expanded to incorporate use of the California Integrated Seismic Network and to require specified evaluations if an earthquake larger than magnitude 2.7 occurs within the vicinity of a well stimulation treatment.



## **6. Monitoring After a Well Stimulation Treatment.**

The proposed regulations require operators to perform ongoing monitoring of a well that has had a well stimulation treatment to determine if there is any indication of a well breach and, if there is such indication, immediately inform the Division and the local Regional Water Quality Control Board, conduct diagnostics, and take all appropriate measures to prevent contamination of protected water or loss of hydrocarbon resources. The required monitoring includes monitoring of production pressures every two days for the first thirty days and monthly after that. The proposed regulations also require operators to report annular pressures to the Division on an annual basis, and immediately inform the Division in the event of specified occurrences. For monitoring purposes, the annular valve must be kept accessible at the surface, unless the Division is satisfied that there are no voids in the annular space of the well. A pressure release device is required for the annulus and the maximum set pressure is specified. The Division may waive the requirement of a pressure release device if satisfied that the need for one is alleviated by other forms of technical analysis and or by operating experience in the area.

## **7. Disclosure.**

SB 4 requires an operator to disclose, within 60 days following the cessation of a well stimulation treatment, specified information regarding the source, volume and composition and disposition of well stimulation fluids, including, but not limited to, hydraulic fracturing fluids, acid well stimulation fluids, and flowback fluids. The proposed regulations reiterate the disclosures specified in the statute, with some minor additions and non-substantive revisions for the sake of clarity. Operators will provide the information to the Division and the Division will make the information available on its website in a format that allows for searching and aggregating the information. Information about the chemical composition of hydraulic fracturing fluids will also be posted to *FracFocus.org*.

For operations that do not meet the definition of well stimulation treatment, the use of acid or the application of pressure to the formation must be briefly described and submitted for inclusion in the permanent well file. A searchable index of those reports will be maintained so that the public can easily review that information.

## **8. Trade Secrets.**

SB 4 imposes substantial limitations on operators' and their suppliers' ability to claim that the chemical composition of the well stimulation fluids they use are subject to trade secret protections. If an operator claims trade secret protection, SB 4 requires that the operator still disclose the information to the Division. If a supplier designates information submitted to the Division as trade secret, then the Division must make a determination of whether or not the information is a protected trade secret. SB 4 sets forth the timing and procedure for publicly disclosing the information if the Division determines that it is not protected as a trade secret. SB 4 also provides that even if the information is a protected trade secret, it must be disclosed to specified government entities, or to a health professional who reasonably believes that the information may be necessary in the diagnosis or treatment of a patient.



## **9. Storage and Handling of Well Stimulation Fluids.**

Current law and regulations administered by the Department/Division contains provisions governing notification, response and clean-up of spills in the oil field environment. The proposed regulations clarify that well stimulation fluids are subject to those reporting, response, and clean-up requirements. Concentrated well stimulation fluid stored on-site prior to mixing, mixed well stimulation fluids, and produced fluids, including the well stimulation fluid flowback, will all be subject to those requirements. In addition, the proposed regulations specify that well stimulation fluids may not be stored at any time in unlined sumps or pits. Further, in the event of a release or spill, operators will be required to provide a report to the Department/Division detailing activities leading up to the release; types and volumes released; cause of release; actions taken to stop, control, and report the release; and steps taken to prevent future releases.

## **10. Post-Well Stimulation Treatment Report.**

The proposed regulations require an operator to submit a report to the Division detailing what happened during the well stimulation treatment. Within sixty days after a well stimulation treatment, the operator is required to report to the Division on what the results were, what pressures were encountered, and how the operations differed from what was anticipated in the treatment design. In addition, the operator is required to describe any hazardous wastes generated during well stimulation and provide copies of hazardous waste manifests if it was transported.

## **11. Acid Volume Threshold.**

A calculated acid volume threshold has been added to the regulations for the purpose of distinguishing between well stimulation treatment and other routine operations. The acid volume threshold will be calculated on a case-by-case basis, factoring in the formation porosity and the wellbore volume. The acid concentration threshold found in the originally proposed regulations has been removed.

## **12. Inter-Agency Information Sharing.**

References and descriptions are added regarding information sharing between the Division and other state regulators, and regarding key requirements of other state regulators.

