NEW CHEMICAL SCENARIO FOR OIL WELL TREATMENT CHEMICALS

Introduction. Oil well treatment chemicals are used only in wells that are already producing crude oil. In contrast, drilling mud additives are applied in the drilling stage, before production.

Processing/Use. Unload into tank; inject at measured rate into water line; pump into producing well; pump out 50/50 mixture of produced crude oil and water; allow phases to separate in tanks; pump crude to oil refinery. (Corrosion inhibitors undergo all steps; emulsion breakers are inserted at the separation tanks.)

Number of Sites. Calculate by dividing 3-year production volume by 500. This assumes 50 ppm of PMN in the produced crude and water mixture.

Total Workers. Six workers per site for 250 days/year. Although one or two workers are present at any time, there are two to four shifts per site.

Inhalation Exposure. Generally none. Additives would air strip in the tank and be lost if they had an appreciable vapor pressure.

Dermal Exposure. Incidental exposure upon unloading to two workers per site, 10 days/yr at manufactured concentration. Gloves and closed system mitigate additional exposure. Four additional workers/site might be incidentally exposed at the use concentration for 250 days/yr.

Releases. In the absence of a partition coefficient, assume half of the PMN is dissolved in the crude oil and destroyed by incineration in refining. Assume that the other half of the PMN production volume is continuously deepwell injected back into the producing formation.

Assumptions. This scenario assumes a use rate of 50 ppm PMN in produced crude and water; correct your number of sites calculation using submitter's concentration. Over the lifetime of a well, about one barrel of water is produced per barrel of crude.

Other. Secondary, or enhanced crude oil production requires that water is first pumped down to displace the crude. This water is not required for primary production. Tertiary oil production means that viscous or gel-forming chemicals are pumped down to displace oil droplets in rock formations. These chemicals are supposed to remain in the rock and not generate additional releases.

An average oil well produces 17,000 bbl/day of crude oil, water free. A medium-sized oil refinery processes 100,000 bbl crude/day. Both types of sites operate about 350 days/yr.

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