POLYMER FLOODING

Certain reservoir conditions can lower the efficiency of a regular waterflood. Natural fractures or high-permeability regions in the reservoir rock sometimes will cause the injected water to channel or flow around much of the oil in place by taking the path of least resistance. The heavier or more viscous oils will also cause problems for a waterflood operation because of their resistance to the more mobile or free-flowing water. To help prevent injected water from bypassing oil, the water can be made more viscous or thickened by the addition of a water- soluble polymer. This, in effect, allows the water to move through more of the reservoir rock, resulting in a larger percentage of oil recovery.

Fresh water may be injected behind the polymer solution to prevent it from being contaminated by the final drive water which may be produced brine. Polymer gel can also be used to shut off high-permeability zones.

CHEMICAL FLOODING
(Polymer)

The method shown requires a preflush to condition the reservoir, the injection of a polymer solution for mobility control to minimize channeling, and a driving fluid (water) to move the polymer solution and resulting oil bank to production wells.

Mobility ratio is improved and flow through more permeable channels is reduced, resulting in increased volumetric sweep.

(Single 5-Spot Pattern Shown)