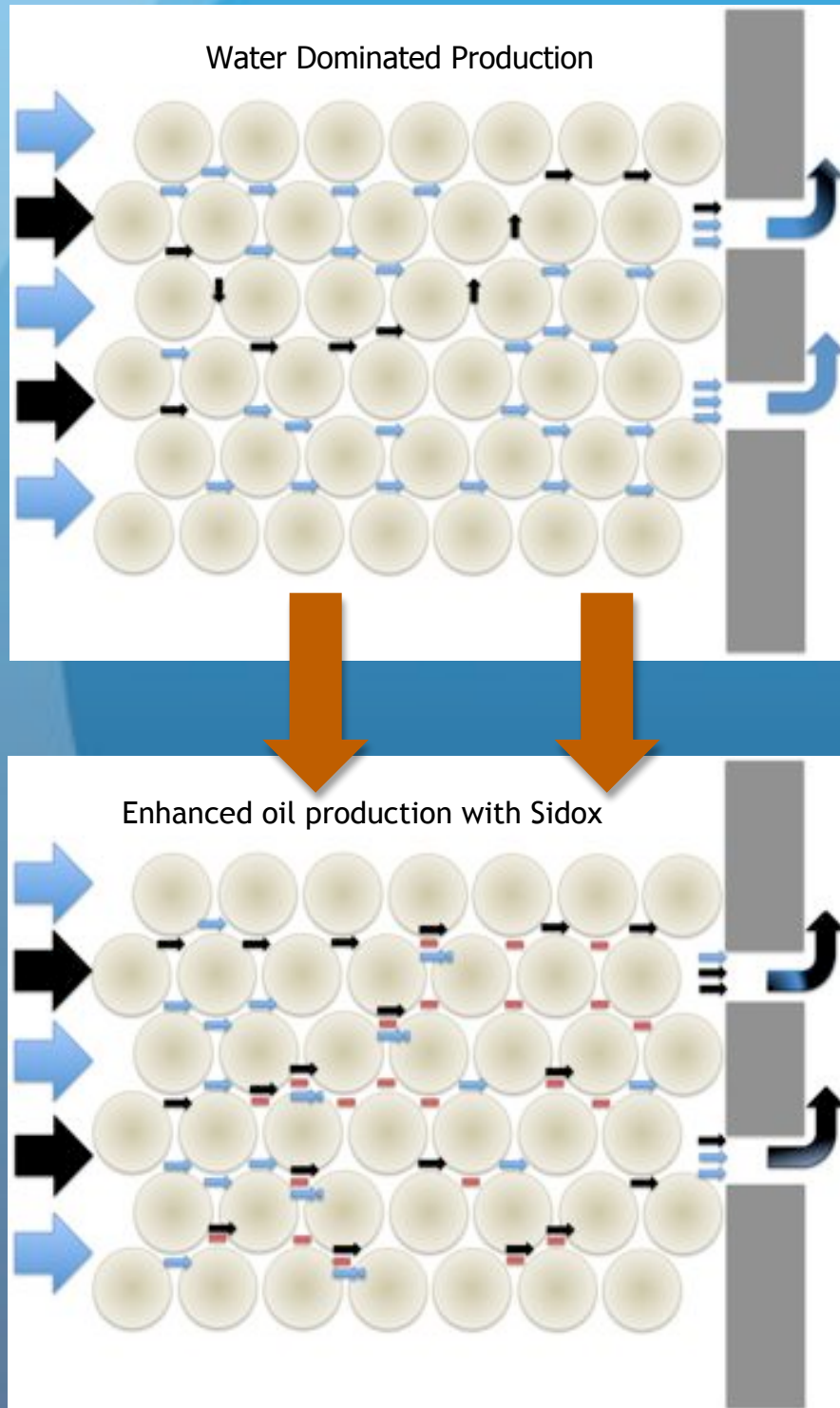




## Increase Oil Production From High Water Cut Wells With SIDOX Treatments



# OIL ENHANCEMENT TECHNOLOGY DELIVERS



**Sidox trial applications in Canada**

Using Sidox as a treatment for high water cut mature producing wells can improve oil production by an average of 70%. Repeated treatments will slow down the rate of decline in mature wells leading to increased reserves recovery.

Use of Sidox to treat the near wellbore area of sandstone wells has been shown to improve oil production rates from wells. In addition repeated treatments show a reduction in the rate of decline of oil production from the wells treated.

On average a Sidox treatment has a life of approximately 6 months, after which wells require retreatment. Depending on the permeability of the wells Sidox treatments can last between 3 and 12 months. The treatments gradually lose their effectiveness due to the Sidox particles being produced back out of the reservoir.

Sidox is suitable for use in both naturally producing and hydraulically fractured and propped sandstone reservoirs.

Sidox is simple to apply and can be used to treat production wells producing from non fractured and fractured sandstone wells

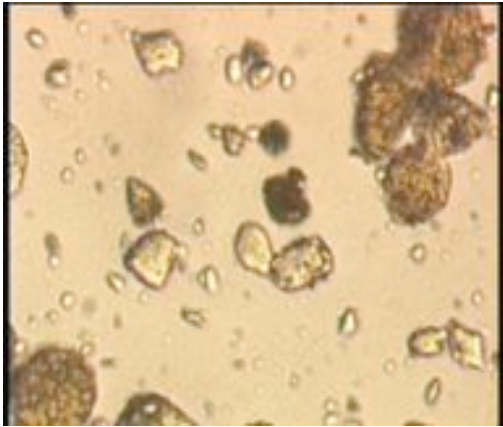
Sidox is typically applied by blending the Sidox powder with produced crude oil and bull-head treating the well. Dependant on whether the well has a packer, the treatment is carried out either down the tubing or the annulus of the well. Blending of the Sidox powder with crude oil is a relatively simple process as Sidox is a highly oleophilic, hydrophobic, size graded powder.

Treatments can be carried out using standard hot oiling equipment.

Treatment crude oil is typically returned fully over two to three days, ensuring that the largest part of the treatment 'cost' is returned quickly.

Sidox can be applied in naturally flowing and pumped wells.

The low rate of return of the Sidox powder has not been shown to have noticeable detrimental effects on down hole pumps or in surface separation systems.



### Sidox particles of mixed sizes

Sidox Technology is based on the use of fine grain specially treated silica particles. The surface of the particles makes them act in formation pores to promote higher oil saturation and to reduce water saturation. This occurs in the near wellbore or near fracture face area.

By positively promoting the near wellbore permeability to oil flow, production of oil is increased.

Core tests indicate that the Sidox particles are transmitted a sufficient distance into the formation to have a significant impact on oil production. The core tests indicate that over a period of time the particles are mostly washed out with production and therefore periodic re-treatments are required.

In tests and field applications carried out there has not been any permanent reduction in the productivity of core samples and actual formations treated.

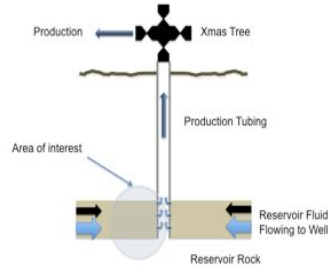
Sidox treatments are likely to be compatible with any EOR methods applied to injection wells.

Compared to other technologies for treating producing oil wells Sidox presents a much more cost effective method of EOR.

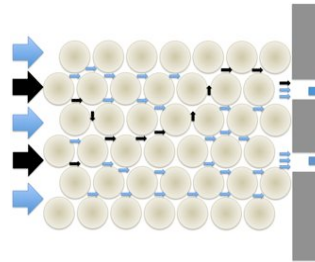
Treatments of Sidox have been carried out in Canada UK and in Russia.

On average in the 15 Canadian trials carried out an additional 4,200 barrels of crude oil has been produced per treatment. Treatments have been carried out up to three times over a period of two years. The average rate of oil production over the 15 treatments has been a 70% increase in oil production, without change to any other well operating parameters.

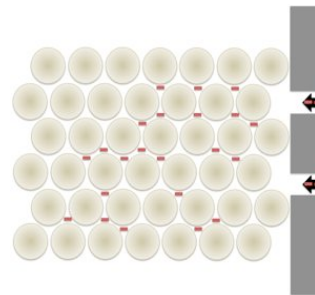
Sidox applications have been used over a number of years and increases in production from treated wells have been sustained through repeated treatments.



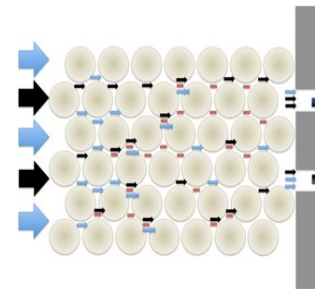
Sidox particles affect the near wellbore area or near fracture face of production wells by enhancing permeability to oil.



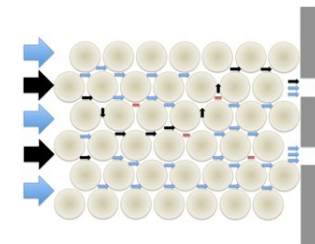
Mature production wells are often dominated by very high near wellbore water saturations.



Sidox particles are injected into the near wellbore area by means of a suspension in crude oil.



Post treatment production of oil is enhanced by promoting significantly high relative permeability to oil in the near wellbore region. This allows for better connection with stranded banks of oil in the reservoir.



Over time the Sidox particles are leached from the reservoir requiring re treatments. On average wells require retreatment on a 6 monthly basis.



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