

## Water Well Treatment Options

### *Quick Break Training*

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The golden rule is “no one size fits all” which means all treatments need to be customised to the well scheduled for attention. Beware of sales persons who claim that their treatment method can either: (1) get production back to exceed more than 100% “of the original”; (2) can be applied to all wells equally and all wells will return to full production; or (3) this treatment will be the only one that the water well will ever need to be given. All of these are warning signs that should trigger the “red flag” and these claims should be discounted in favour of real examples of sustainable recoveries. Reality is that every well should be treated as a separate challenge and there should be some attempt to customise the treatment for each well to address differences between them that are observed.

Treatment of a well commonly can be chemical or physical and vary to include a combination of both. There has never been the development of biological treatment that has been shown to be effective in the long term. Traditional chemical treatments can include a single compound or a blend. Single chemical treatments have now largely been replaced by a blend of chemicals usually used together and including some form of biocide, pH modifier and a detergent/dispersant to kill the biomass, destroy the plugs and clogs, and clean off the surfaces respectively. In general the new approach involves three phases in the treatment that can be summarised as **shock**, **disrupt** and **disperse**. At the end of the treatment it is common for the well environment to contain a lot of dispersed biomass that has to be removed. It needs to be remembered that this biomass has grown acting as a filter degrading some organics but accumulating many chemicals. These bioaccumulated chemicals will be released by dispersion and will enter the water. This would mean that a successful treatment of a well could include treating the dispersing biomass as hazardous waste depending upon the bioaccumulates found to be present. Some treatments involve the modifications to temperature by the addition of heat (to raise the temperature) and coolant (to lower the temperature). Generally raising the temperature during treatment causes faster chemical reactions and greater impacts on the biomass. The blended chemical heat treatment (BCHT™, ARCC Inc, FL) uses this approach.

More recently in an effort to be “greener” treatments have been used that are purely physical in nature. Here physical forces are pulsed through the well environment in a manner that is disruptive causing the biomass to collapse prior to dispersion. One popular system utilises impulse generation devices such as the Hydropulse® that can be used in conjunction with other traditional mechanical methods.

Many traditional treatment methods employ chemicals in which phosphorus is employed as phosphate, phosphoric acid or polyphosphates. These could cause stimulation of the post-treatment surviving biomass to grow utilizing the residual phosphorus in the well. It is recommended that there should be a demonstration that all of the treatment phosphorus has been removed along with the phosphorus dispersed in the biomass from the treated well. Failure to do this means that the residual phosphorus left down hole will stimulate the growth of the biomass that will inevitably form after treatment.

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