

## Bio-GAC™ System

The *Bio-GAC™* system consists of traditional granular activated carbon units typically used for adsorption of hydrocarbons that are enhanced with a bioreactor upgrade modification. The *Bio-GAC™* system utilizes the activated carbon as the absorber and bio-bed similar to activated bio-bed bioreactors used in a wastewater treatment plant. The advantage of this system over traditional GAC is that the system is very effective in the treatment of MtBE and its byproducts, resulting in typical costs savings of up to 50 percent relative to traditional GAC systems.

The surface of granular-activated carbon adsorbs organic compounds, such as MtBE, and acts as a "storage place" to buffer variations in influent concentration. The surface is also an excellent attachment medium for bacteria. This allows the bacteria to thrive in the presence of uniform aqueous concentrations of MtBE and other organic compounds. The treatment uses bioreactors that are operated in an up-flow, fluidized bed mode to minimize fouling problems.

The advantages of the *Bio-GAC™* unit over traditional GAC system are as follows:

- The rate of carbon consumption is lower
- The carbon unit will last longer therefore the cost for carbon change over is less
- The adsorbed contaminants are consumed by micro-organisms rather than adsorbed; therefore there is no potential future liability
- Can be easily integrated with existing equipment
- Can treat MtBE and by products such as TBA

### *Bio-GAC™* system Process Flow Diagram

