FACT SHEET

Upflow Anaerobic Sludge Blanket Reactor

The Upflow Anaerobic Sludge Blanket (UASB) reactor is a form of anaerobic (oxygen-free) digester that is used in the treatment of wastewater.

Benefits of Upflow Anaerobic Sludge Blanket reactor

- It is able to treat highly polluted water
- Low energy requirement because aeration is not needed
- Less operation and maintenance cost
- Lower skill requirement for operation / supervision
- Compact design
- Less sludge production
- Biogas produced by the process can be used for other purposes
- Sludge can be used as fertilizers

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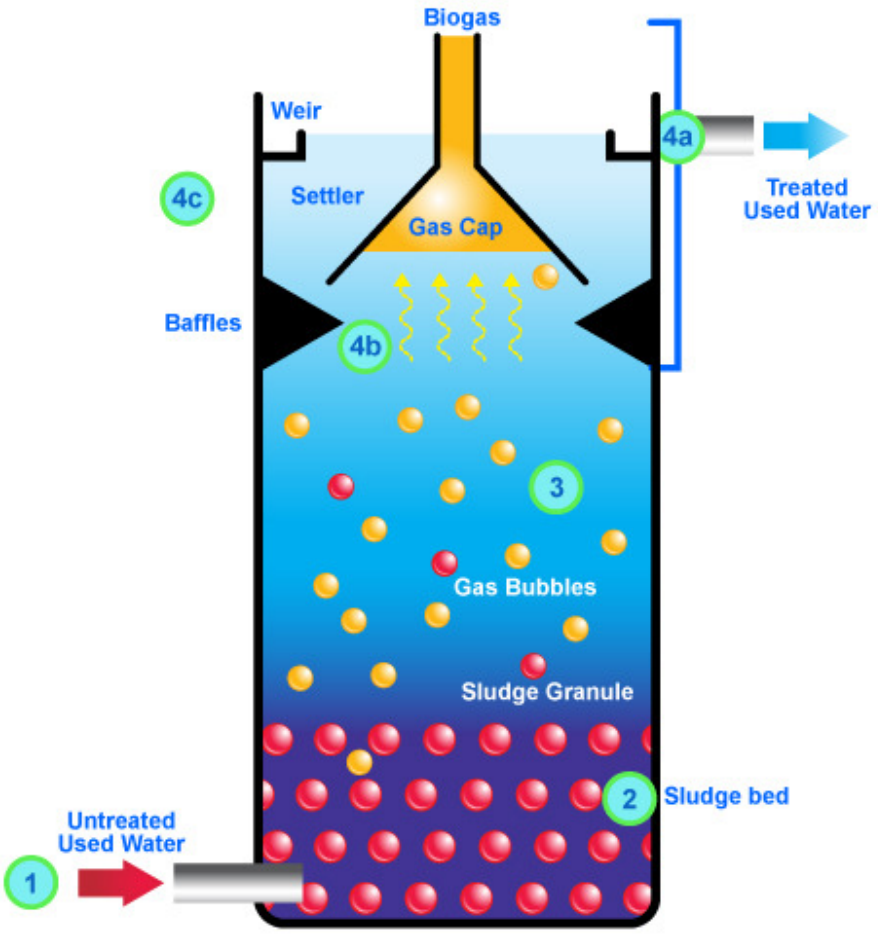
Upflow Anaerobic Sludge Blanket



Step 1:
Used water is channelled into the bottom of the reactor under the sludge bed.

Step 2:
The sludge bed is made up of a thick layer of sludge granules (red spheres). These granules are large aggregates of micro-organisms. As the used water passes through the sludge bed, the micro-organisms remove the organic contaminants in the used water and in the process, produce biogas (yellow bubbles) This process takes place in the absence of oxygen.

Step 3:
The upward flow of the treated used water and the rising of the biogas cause some of the smaller and lighter granules to be suspended and they move up the reactor.

Step 4a:
At the three-phase separator, the biogas, treated used water and granules will be separated. The gas cap will collect the biogas which moves upwards.

Step 4b:
The upward-moving granules are obstructed by the sides of the gas cap and the barriers at the sides of the reactor (known as baffles) and are retained inside the reactor.

Step 4c:
The treated used water will continue moving up the reactor beyond the baffles and overflow from the reactor over the weirs. The treated used water cannot get into the gas cap due to the gas pressure exerted by the biogas.

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