



11-05-09

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**BULLETIN**

# SHAC Shactivate Septic Digester



## WASTE TREATMENT SYSTEMS & BIOSOLIDS

Organic solids (bio-solids) accumulate over time in many types of waste treatment and storage systems. The periodic removal of these organic solids requires expensive equipment and is subject to high labor and disposal costs.

Within waste treatment lagoons, organic solids accumulation results in a gradual loss of volume capacity. Therefore, dredging and disposal of bio-solids must occur routinely to maintain the efficiency of the lagoon.

Within home septic systems, solids accumulate over time. If bio-solids are allowed to accumulate excessively, the drain field and/or septic lines may become blocked. In severe cases, sewage may even begin to back-up in the system.

Restaurant grease traps also frequently experience solids accumulation problems and blockages due to the high grease and fat content of these bio-solids.

In addition to accumulation of organic solids, odors are often present in waste collection and treatment systems. Odors are problematic in a range of locations including lagoons, septic tanks, grease traps, outdoor toilets, portable toilets, RV's etc.

*Shactivate* is effective in reducing both volume of organic solids and the odors associated with waste collection and treatment systems. *Shactivate* is also effective in various types of commercial process lagoon settings.



## EFFLUENT & THE ENVIRONMENT

The topic of environmental protection has received increased attention in recent years. The quality of discharged effluent is an issue which significantly impacts the environment. As effluent released from sewage treatment systems is discharged into a water source, nutrients and contaminants have the potential to pollute rivers and streams.

*Shactivate* has the ability to complex various nutrients and contaminants, thereby reducing bio-availability within the environment. In addition, *Shactivate* contains no chemicals, requires no special equipment for application, and is environmentally friendly.



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## BENEFITS OF USING SHACTIVATE

- Reduces organic solids and offensive odors when used as directed.
- Contains ingredients which stimulate resident microbial communities and reduce contaminant bio-availability.
- Formulated to treat conditions found in municipal sewage systems, residential septic systems, grease traps, portable and outdoor toilets, and RV's.
- Reduces time and expenses (dredging, pumping and disposal of bio-solids) related to system maintenance.
- Environmentally friendly.
- Non-toxic and safe to use.
- Easy to apply.



## HOW SHACTIVATE WORKS

*Shactivate* assists in the breakdown of organic solids by stimulating and balancing the various microbial communities present in sewage systems. Stimulation of these microbial communities allows the digestion of organic solids to occur at optimum rates. The raw materials in SHAC products are acquired from one of the highest quality humate sources in the world. The *Shactivate* product contains the following:

### Humic Acids

### Activated Carbon

### Essential Trace Minerals

*Shactivate* acts by the following mechanisms to achieve results:

- **Adsorption** - The adsorption/complexation of contaminants and excess nutrients by the activated carbon and humic acids contained in the product reduces the bio-availability of these compounds.
- **Stimulation** – Humic acids and trace minerals in the product act as microbial bio-stimulants. In addition, the reduced bio-availability of contaminants (see above) results in increased microbial activity.
- **Natural Attenuation** - This involves stimulating the organisms in a given environment to remediate that environment. Stimulation of resident microbes enhances the natural decomposition process and increases the rate of organic bio-digestion. Odor control is achieved when decomposition occurs more 'completely' into less offensive and less odorous end products.

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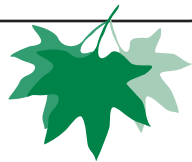
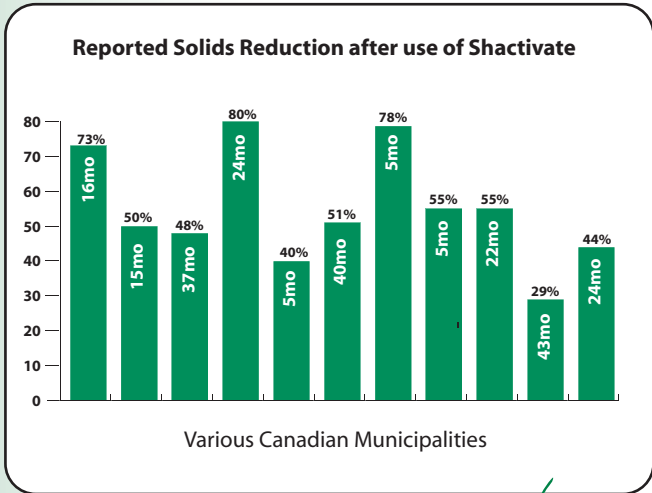
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## SHACTIVATE SOLIDS REDUCTION RESULTS

*Shactivate* has been proven to reduce the volume of organic solids within sewage treatment systems.

In various Canadian communities, solids reduction was monitored over varied lengths of time after *Shactivate* treatment. The length of treatment (in months) and corresponding reduction in organic solids is summarized on the following graph.

The results indicate up to 80% reduction in organic solids with maintained *Shactivate* treatment.



In numerous cases *Shactivate* has significantly reduced the volume of organic solids, thereby reducing the costs associated with the handling and disposal of these solids.

**It has been reported that on average, a 20-25% reduction in solids is typically achieved within the first 12 months of maintained *Shactivate* use.**

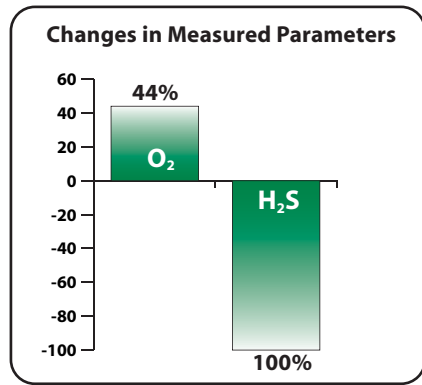
## SHACTIVATE CASE STUDIES

In various municipal settings, it has been reported that *Shactivate* has demonstrated the ability to improve certain effluent quality parameters such as ammonia, phosphorus and TSS. These effects are typically observed with long-term use of the product.

Also, in a variety of settings *Shactivate* has the ability to adsorb/complex sulphur compounds present within the waste stream. This results in reduced emission of harmful hydrogen sulfide (H<sub>2</sub>S) gas.

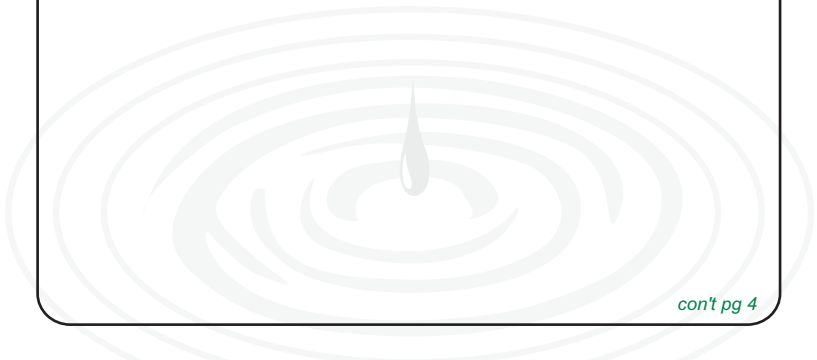
In Abbotsford, BC, sewage collection lines were treated with *Shactivate* and monitored over approximately 5 months. *Shactivate* was applied to a portion of the sewage system containing 9 manhole stations, a sump station, and a reload yard. The following results were observed by municipal staff with standard gas detection monitors:

- Increase in average oxygen levels (O<sub>2</sub>)\*
- Significant reduction in Hydrogen Sulfide (H<sub>2</sub>S)\*\*



\*Oxygen concentrations (%) as low as 4.1, with an average of 13.3 were recorded during the monitoring period prior to treatment. After treatment, oxygen levels as high 20.9 were recorded at sample locations.

\*\* Prior to treatment, H<sub>2</sub>S levels as high as 42 ppm, and average of 21.8 ppm were recorded at sample locations. After treatment, levels of 0 ppm were recorded at all sample locations.





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## Information Sources of Interest

- Alberta Environmental Protection. Water Quality Based Effluent Limits Procedures Manual. December, 1995.
- Ontario Ministry of Environment. Determination of Treatment Requirements for Municipal and Private Sewage Treatment Works Discharging to Surface Waters. Procedure F5-1, updated 2004.
- United States Environmental Protection Agency. Bio-solids Generation, Use and Disposal in the United States. EPA530-R-99-009, September 1999.

*Additional information regarding the research and/or case studies summarized in this document may be requested from SHAC Head Office.*

## Notes:

**For the authorized distributor  
or dealer nearest you,  
contact SHAC Environmental Products  
at 1-888-533-4446 or visit us at  
[www.shac.ca](http://www.shac.ca).**

