



## **New Patented Bio-Reactor Filtercrobe®**

American Environmental Fabrication & Supply offers the patented Filtercrobe® bio-reactor vapor phase carbon adsorption system for use at manufacturing plants and site remediation for off-gases. Typically carbon adsorption systems do not destroy the VOC's and require additional rejuvenation, removal or replacement of the activated carbon either by increasing the temperature by steam reforming or destruction by thermal oxidation of the highly concentrated vapors during the rejuvenation phase. With this patented design no additional equipment, controls or fuel costs are borne during the activated carbon's rejuvenation phase. The continual rejuvenation allows the activated carbon to remain within the reaction chamber for up to 20 years without removal.

Typically off-gases are pumped through a series of canisters or columns containing activated carbon to which the organic contaminants are adsorbed. Periodic replacement or regeneration of the saturated carbon is required in a method removing the trapped VOC's from the activated carbon bed. Usually vapor-phase carbon adsorption is not recommended to remove high contaminant concentrations from the effluent air streams with the economics favoring pretreatment of the VOC stream, followed by the use of a vapor-phase granulated activated carbon system as a polishing step.

With the Filtercrobe® patented bio-reactor system the activated carbon rejuvenates during operation and requires no auxiliary heat pump; compressors, nitrogen or chillers for de-adsorption or separate thermal oxidation equipment for high level VOC destruction. All the VOC destruction and removal occurs within the bio-reactors activated carbon chamber by selected microbes. Higher levels of VOC contaminants are allowed to be processed with a very high rate of destruction typically over 98%, this is accomplished by the continual rejuvenation cycle constantly feeding the microbes.

Specifically designed microbial digestion occurs within the system and microbes digest the VOCs creating CO<sub>2</sub>. The Filtercrobe I® offers continual rejuvenation of the activated carbon beds at a rate of three times per hour; therefore there is no spent activated carbon removal or replacement necessary.

The microbial population is a particular assemblage of natural microorganisms initially selected to bio-remediate hydrocarbons. The microbes are effective on a wide range of VOC compounds. A major difference between these microbes and their indigenous cousins is their density, over 90 billion per gram. The organisms also can double in population every 15 minutes in a favorably high VOC environment. They are non-toxic and non-pathogenic. It is due to the special characteristics of this collection of microbes which act as modern filters for the activated carbon within the Filtercrobe® bio-reactor unit.

Microbes must be added at a very low cost every four weeks to maintain a viable microbial colony for consistent VOC degradation. Typical yearly cost of operation, microbes and maintenance on a 20,000 scfm unit are \$8,000.00 USD. These microbes will reduce the contaminants within the bio-reactor to near EPA drinking water standard and may be discharged to any waste water disposal line without any sludge buildup of any kind.

When removing wastewater odor, catalytic carbon is utilized and the carbon bed becomes a large filter for odor removal on pumping stations or wastewater treatment plants. The difference of this system is the method of cleaning the catalytic carbon while in place with no operational downtime. There is no high-acid



water to dispose as long as the water bath section is discharged every month before the system is recharged with the microbial product. The water discharge can be dispensed as normal wastewater.

Available Design Configurations: Skid Mounted Stationary or Trailer Mounted Mobile System



Stationary Filtercrobe® Unit



Mobile Filtercrobe® System

**Biodegradable Compounds:**

Acrylonitrile  
 Aromatics  
 Benzene  
 Biphenyl  
 Branched Hydrocarbons  
 Chlorinated Phenols  
 Chlorobenzene  
 Cyanide  
 Dichlorobenzene  
 Diesel Fuels  
 Diethyleneglycol  
 Dioxin  
 Ethylbenzene  
 Gasoline  
 Grease  
 Sulfur Dioxide  
 Sulfur Trioxide

Halogenated Hydrocarbons  
 Heptane  
 Hydrocarbons  
 Jet Fuels  
 Kerosene  
 Mercaptan  
 Methylene Chloride  
 Monoalkylbenzenes  
 \*Oil Base Paints/Fluid/Ink  
 \*Containing no heavy metals  
 Polycyclic Aromatics  
 Styrene  
 Toluene  
 Xylene  
 NOX  
 Hydrogen Sulfide  
 Methane

**Some of the industries that benefit from the Filtercrobe® bio-filtration system:**

Coatings, Oil & Gas Refineries, Waste Treatment, Chemical Manufacturing, Rubber Manufacturing, Fiberglass Production, Foam Production, Printing, Dry Cleaning, Energy, Steel, Rendering, Bakery, Fishmeal, Natural Gas Processing, Pharmaceutical and Site Remediation.

*The Filtercrobe® Bio-Reactor is a cost effective approach to vapor phase emissions, designed to minimally process as little as 2,500 scfm air flows. Should your process require less process flow ambient make up air can be supplied to the unit. (foot print of 8 ft. diameter X 4 ft. length) or 100,000's of scfm in a modular skid mounted configuration in multiple 20,000 scfm units (foot print of 10.5 ft diameter X 16 ft. each). For more information about our product visit our website at: [www.american-environmental.us](http://www.american-environmental.us)*