

# SPILL PREVENTION AND STORMWATER TREATMENT FOR AIRPORTS

*Reduction of Heavy Metals, Bacteria and Hydrocarbons*



## Smart Sponge®

- Chemically selective to hydrocarbons removing sheen levels
- Capable of removing up to 3 times its own weight in hydrocarbons
- Reduces Cadmium, Copper, Chromium, Lead, Zinc, Iron, Arsenic, Selenium and Ortho-Phosphate  
Inhibits growth of mildew and mold with Smart Sponge® HM
- Registered with the EPA (EPA Registration #86256-1)
- Capable of transforming hydrocarbons into a stable solid per EPA's Toxicity Characteristic Leaching Procedure (TCLP)
- Meets or exceeds Stormwater Best Management Practices (BMP)
- Offers non-point source pollution prevention and potential for long-standing remediation
- Does not require modification of existing structures
- Effective in fresh or salt water temperatures ranging from 32°F to 130°F

## Products

Smart Sponge® products are excellent solutions for airports. AbTech's Smart Sponge® technology is at the heart of its product innovation. Its unique molecular structure is based on innovative polymer technologies that are chemically selective to hydrocarbons. Smart Sponge® fully encapsulates recovered oil, resulting in a substantially more effective response that prevents absorbed oil from leaching. It is also capable of removing low levels of oil from water, thereby successfully removing sheen.



Once oil is absorbed, the Smart Sponge® transforms the pollutants into a stable solid for easy recycling, providing a closed-loop solution to water pollution. Smart Sponge® technology provides cost-effective BMPs with low installation and maintenance labor costs. In comparison to other products, the Smart Sponge® technology also allows for less expensive and less problematic handling and disposal of the waste product. The Smart Sponge® was designed not to deteriorate in water, allowing for a longer product life, permitting it to remain in place until fully saturated and resulting in no wasted product.

## The Urban-Filter® with Smart Sponge®

The Ultra Urban Filter Curb Opening Series is a simple yet effective tool for stormwater filtration of hydrocarbons, trash and sediment. The unique micro-porosity of Smart Sponge allows each CO1414 filter a hydraulic flow rate of more than 300 gallons per minute and has proven effective in removing more than 80% of hydrocarbons. The unique design of the Curb Opening Series allows crews to easily hang the appropriate number of filters in each drain on a simple mounting bracket. The product is designed with a lateral bypass to utilize each filter box, as well as an overflow capability to eliminate the potential for street flooding in the event of a plugged filter.

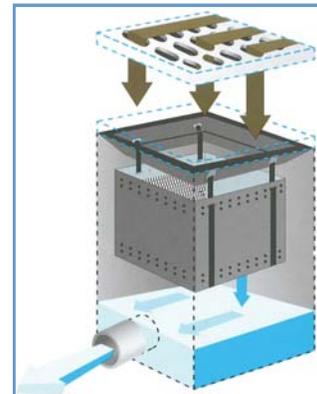


### Case Study - DFW Airport, Dallas, TX

*A pilot study was performed at one of the airports hydrocarbon hotspots near the Sky Chefs facility. The study involved installing 8 CO1414N filters and monitoring their performance over a 6 month period, resulting in removing over 55 pounds of hydrocarbons and 16 pounds of sediment. Talks of expansion are in progress.*



The Ultra Urban Filter Drain Insert Series offers the same filtration characteristics of the CO series for stormwater filtration of hydrocarbons, trash and sediment. The unique micro porosity of Smart Sponge allows a hydraulic flow rate between 200 and 500 gallons per minute based on the filter size and has proven effective in removing more than 80% of hydrocarbons.



### Case Study - Pope Air Force Base, NC

*The Ultra Urban Filter was the BMP of choice to protect the flight line from discharging jet fuel and other hydrocarbons from the base. The 135 filters were easily retrofitted into the existing drains and remain easy to maintain and service. These units are designed to be suspended beneath a mounting collar installed under the stormwater grates. This simple design allows easy access for maintenance while eliminating the potential for street flooding in the event of a plugged filter.*

AbTech's team of engineers will work with customers to understand each site's characteristics, including hydraulics and pollutant contamination levels, and will confirm the appropriate amount of Smart Sponge to achieve the projects water quality objectives. Using customized drain inserts allows Smart Sponge to be adapted for shallow or irregular drains to provide a Smart solution for virtually every site.



### Case Study - Westchester County Airport, NY

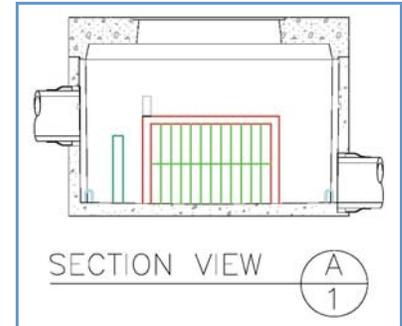
Shortly after initial installation of 30+ filters, a 5 to 10 gallon fuel spill occurred, and the Smart Sponge successfully captured the spill before it could enter the storm drain. This prevented a costly cleanup and potential fine for discharging hydrocarbons to an adjacent reservoir, which led to additional filters and custom inserts being installed.



### Smart Sponge® Hydrocarbon Vault

As an alternative to treating individual catch basins, Smart Sponge Vaults utilizing Smart Pak filtration modules are ideal for stormwater treatment at the end of pipe. By utilizing the Smart Sponge Smart Pak vault sizes can be easily adapted and sized for various flow rates and contamination levels to solve a wide range of stormwater treatment issues.

These engineered solutions can be direct or radial flow, and can easily be adapted to treat first flush while allowing the larger flow of a major storm event to pass around the systems to achieve the hydraulic requirements of the watershed.



### Case Study - Village of Babylon, NY

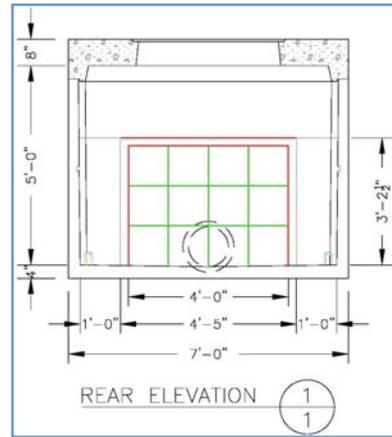
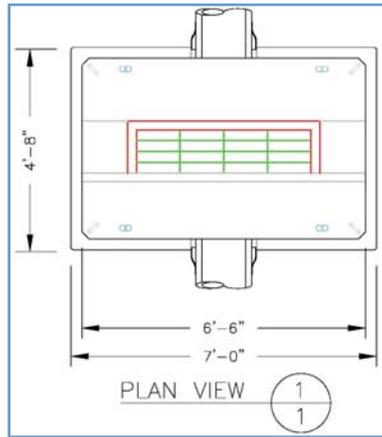
The Village of Babylon was tasked with cleaning up their stormwater discharges into the Long Island Sound. These pictures show the flexibility and engineering of Smart Sponge vaults. The installations provided measurable water quality improvement of stormwater discharges flowing into Long Island Sound, which has led to a project that will retrofit 92 additional outfalls.



Smart Sponge Vaults can also be designed for spill containment and aid in meeting Spill Prevention, Control, and Countermeasure (SPCC) requirements. The Smart Sponge media will completely encapsulate or prohibit the conveyance of the designed spill volume, so there is little risk, if any, of hydrocarbons being discharged off site, even for large spills.

Inspection and maintenance are simplified by having all flows treated at one easy-to-access location. There is no longer the need to guess how much sludge or hydrocarbons have accumulated like in a standard separator. Owners can visually assess and remove accumulated sediment and debris while inspecting Smart Paks to determine their need to be replaced.

Speak to an AbTech representative or authorized AbTech distributor to learn how Smart Sponge can provide cost savings for meeting SPCC requirements.



## Oil/Water Separator Upgrade

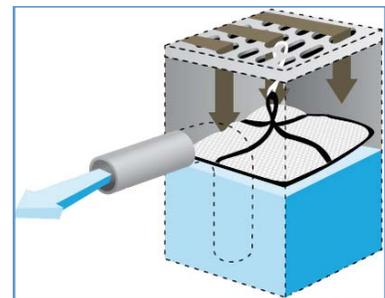
Oil/Water Separator have long been the technology of choice for capturing hydrocarbons in the event of a spill or for separating hydrocarbons from flowing water. Their overall effectiveness has been hard to determine, as the method of removal is strictly gravity separation and can be very dependent on the flow rate through the unit and amount of hydrocarbons in the unit during operation.

If the flow rate into the separator is too high, the hydrocarbons will not effectively separate from the water and can be discharged causing a violation. If a separator is not maintained frequently enough it will increase the chance for a violation as well. In between cleanings, an Oil/Water Separator has an unknown quantity of hydrocarbons floating on the water surface within the unit. When a spill or storm event occurs, it is not uncommon for the surge of fluid flowing into the unit to cause an unknown amount of hydrocarbons to be discharged from the unit.

## Passive Skimmer

The AbTech Passive Skimmer allows Smart Sponge to constantly absorb hydrocarbons while floating on the surface of water in Oil/Water Separators, Hydrodynamic Separators, Retention Ponds, or other water bodies. Passive skimmers can also be used to line trench drains to capture hydrocarbons in airports, fuel facilities, train and bus depots, or maintenance yards.

Passive Skimmers are chemically selective to hydrocarbons to encapsulate captured oily sheen transforming the oil to a stable solid that will not be re-released in a major stormwater or spill event.



## Case Study - Royal Air Force, Coningsby, UK

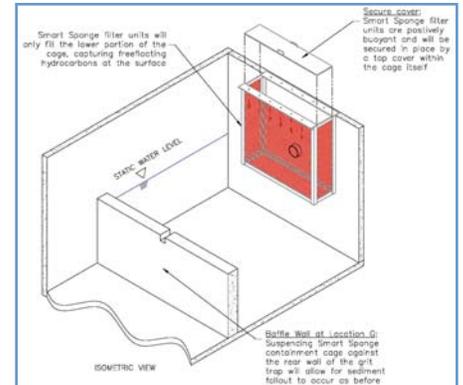
RAF Coningsby was the site for a demonstration project using AbTech Passive Skimmers. The Smart Sponge product was placed in the third chamber of several OWIs involved in the test and demonstrated a dramatic 64% reduction in the total cost of treatment. Impressively, a 99% reduction in the amount of waste generated was achieved by solidifying



the oil within the Smart Sponge rather than pumping away oily water with oil concentrations of 1000ppm. By extending these test numbers to all 38 OWIs on site at RAF Coningsby the potential savings was calculated as £33,948, approximately \$50,000 US (64%), and 1,258.6 tons of waste (99.9%).

## Smart Sponge Polishing Unit

The Smart Sponge Polishing Unit is another solution that is great for retrofitting equipment for improved performance. If existing equipment, like an Oil/Water Separator, is not achieving desired or required effluent targets for petroleum hydrocarbons, a Smart Sponge Polishing Unit can be installed to avoid costly installation of new systems or devices. The Smart Sponge Polishing Unit will ensure discharge limits are met and downstream systems are protected from hydrocarbon contamination. To further reduce the capital costs associated with retrofitting or upgrading equipment, the Smart Sponge Polishing Unit can be installed within the structure of the existing equipment itself, if possible.



## Smart Sponge Disposal Options

As local conditions, product use, and exposure can vary widely, the end user must determine the most appropriate disposal method for a spent Smart Sponge® or Smart Sponge® Plus product. However Smart Sponge® samples saturated with hydrocarbons both in the lab and in the field have been tested according to the EPA's Toxicity Characteristic Leaching Procedure ("TCLP"). These tests show that Smart Sponge® is a "non-leaching" product. As a result, Smart Sponge® technology can afford many cost effective and environmentally friendly disposal options. The following waste disposal and resource recovery industries have accepted spent Smart Sponge products for disposal and/or recycling.

**Waste-to-Energy Facilities** - A specialized segment of the solid waste industry has used spent Smart Sponge® as an alternative fuel in the production of electricity. WTE is acknowledged at the federal level as a renewable energy source under the Federal Power Act, Title IV of the Clean Air Act and is a participant in the Department of Energy's National Renewable Energy Program.

**Cement Kilns** - This industry has used the spent Smart Sponge® as an alternative fuel in the production process of Portland Cement. This process is considered a beneficial reuse of waste products. The BTU value of spent Smart Sponge® is consistently above the average acceptable levels set for this high temperature.

**Landfills** - As discussed above, spent Smart Sponge® products have been classified as a solid waste and have been accepted at Subtitle D Landfills.

Please keep in mind that, depending upon local conditions, product use, and exposure, a spent Smart Sponge® product could contain one or more of a wide range of contaminants that may impact available disposal options. As a result, generators of spent Smart Sponge products must have their waste analyzed, tested, and classified to determine the appropriate disposal method. AbTech Industries does not take any responsibility for handling, transport, disposal, or recycling of spent Smart Sponge® products. For a more detailed disposal/reuse overview, please see the "Smart Sponge® Products Disposal Option" documents available upon request from AbTech Industries. AbTech Smart Sponge products have been extensively tested both in the laboratory and in the field - with additional testing on-going all the time. Nevertheless, because local conditions, product use, and exposure can vary widely, individual results may differ. AbTech

## AbTech Industries In

Smart Sponge® products must be used properly and in accordance with all manufacturer instructions. AbTech Industries does not take responsibility for any product misuse.

## About AbTech Industries

AbTech Industries, Inc., based in Scottsdale, Arizona, is an environmental technologies firm dedicated to providing innovative solutions to address water pollution issues facing communities and industry. Since its founding in 1996, AbTech has developed a variety of products that leverage its cornerstone technology called Smart Sponge®. This Patented technology's oil absorbing capabilities make it highly effective as a filtration media to remove hydrocarbons and other pollutants from water. This innovative breakthrough allows Smart Sponge to remove hydrocarbons at a molecular level without leaching, providing superior treatment over competing technologies.



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