



## Waste Profiling

Waste profiling process to determine classification of spent **Smart Sponge**<sup>®</sup> products for disposal and recycling purposes.

The first step that must perform in order to understand the process is to identify the specific regulations that affect the customer in the State in which the customer exists. The following hyperlink brings you to a web site that lists all EPA Regions & State Environmental Departments

<http://www.epa.gov/regional/federal/envrolst.htm>

After the **Smart Sponge** has performed its function of absorbing the hydrocarbon petroleum contaminant for the customer, the customer has now become the generator of waste. The first thing the generator will want to do is remove any "Free Liquids"<sup>1</sup> from the **Smart Sponge** products. Since **Smart Sponge** will not absorb any water, the amount of free liquids (water) will be minimal as compared to polypropylene, recycled fiber or other sorbents

Next, the generator will proceed to determine whether the spent **Smart Sponge** is a solid waste. The most effective way to determine this is to rule out it being a hazardous waste first by determining if it possesses hazardous waste characteristics. If it does not possess hazardous waste characteristics then by default the spent **Smart Sponge** will be defined as solid waste and can be handled as such.

The determination as to whether or not the **Smart Sponge** is a hazardous waste is made by answering the following questions:

Does the EPA list the waste, which has been absorbed by **Smart Sponge** as a hazardous waste?

1. Lists available in, 40 CFR 261

<http://www.epa.gov/docs/epacfr40/chapt-I.info/subch-I/40P0261.pdf>

2. Adobe Acrobat Reader needed to view and found at;

<http://www.adobe.com/supportservice/custsupport/LIBRARY/acrwin.htm>

If the contaminant absorbed is listed as a hazardous waste, then by definition the waste is now a hazardous waste and should be professionally managed by a hazardous waste management company.

It should be noted that motor oil, grease and hydraulic oil are not listed as hazardous wastes; and therefore, these hydrocarbons which are found in stormwater and bilge water would not be considered hazardous substances.

However if the waste is not listed on the EPA's lists, does the waste exhibit a "hazardous characteristic" and be considered a hazardous waste, even though it is not listed?

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<sup>1</sup>"Free Liquids" - means liquids which readily separate from the solid portion of the waste under ambient temperature and pressure. Using the paint filter test (EPA Method # 9095), or the applicable State Regulation in your customers' jurisdiction determines free liquids.

The four characteristics or properties that make a waste "hazardous" are as follows:

**1) Ignitability** (40 CFR 261.21) *Fire Hazards* -

- a) This will include liquids with a flash point of < 140° F (**Smart Sponge** is not a liquid),
- b) Non-liquid materials with the potential to spontaneously combust (**Smart Sponge** will not spontaneously combust),
- c) An ignitable compressed gas (**Smart Sponge** is not a gas),
- d) Or if its an oxidizer (**Smart Sponge** is not an oxidizer).

**2) Corrosivity** (40 CFR 261.22) *by pH or Steel Test* -

- a) Aqueous solutions with a pH less than or equals to 2 or greater than or equal to 12.5 (**Smart Sponge** is not an aqueous solution),
- b) Or liquids that will corrode steel at a rate of greater than 6.35 mm (0.25") per year at 130° F (55° C) (**Smart Sponge** will not corrode steel)

**3) Reactivity** (40 CFR 261.23) *Violent Reactions* -

- a) Normally unstable and undergoes violent change without detonating
- b) Reacts with water
- c) Forms potentially explosive mixtures with water
- d) Produces toxic gases when mixed with water
- e) Cyanide or sulfide containing material which release toxic gases under specified pH range
- f) Capable of detonating if struck or heated
- g) Capable of detonation under standard temperature and pressure
- h) A DOT explosive, as specified. (none of the above applies to **Smart Sponge**®)

Although the above characteristic testing procedures are listed, part of the regulations mention that the "generators knowledge" [40 CFR 262.11 (c), (2)<sup>2</sup>] of the process waste generated is an acceptable method of determining those characteristics. If the generator knows that the solid spent **Smart Sponge**® is not ignitable, corrosive or reactive, along with having available the proper analyses and documentation that can back up the claim that the waste does not exhibit a hazardous waste characteristic, then continue to the next step in the characterization process.

**4) Toxicity** (40 CFR 261.24) *By "Leachable" Constituents* -

This includes any waste which, when subjected to EPA's Toxicity Characteristic Leaching Procedure (**TCLP**)<sup>3</sup>, produces a leachate which contains any one (or more) of 39 constituents listed (40 CFR 261) at concentrations equal to or greater than those specified in the table. To exceed these thresholds will then characterize the waste as a hazardous waste. If the results fall below these concentrations, then the waste will be characterized as a non-hazardous solid waste.

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<sup>2</sup> 40 CFR 262.11 (c), (2) - Generator Knowledge - "Applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used".

<sup>3</sup> TCLP is the United States EPA's testing protocol, individual States may have their own testing protocols and thresholds, the generator or its consultant must confirm the actual specific regulations that relate to their waste generation. AbTech Industries makes no claim or warranty as to the actual classification of the generator's waste or whether the generator has performed the waste profile properly.

The TCLP is designed to simulate landfill conditions and the effects of breaking down the solid wastes into liquids. The idea being that if your waste would contaminate the groundwater underneath a landfill with one or more of the 39 constituents, then your waste exhibits a toxicity characteristic for each constituent that would leach out.

It is suggested that testing for the BTEX chemicals (Benzene, Toluene, Ethylbenzene, and Xylenes) which are volatile monoaromatic hydrocarbons commonly found together in crude petroleum and petroleum products such as gasoline, be included in the TCLP Procedure.

Contact either your waste hauler or service entity that is responsible for your non-hazardous waste disposal. Present the information gathered during the waste profile process to them and they will communicate with the landfill or recycling facility as to whether or not there is additional testing required. Additional requirements may be part of the individual facility's permit regarding waste generated in your process.

## Recycling Alternatives – Waste to Energy

For acceptance of non-hazardous solid waste for recycling through Covanta Secure Services or Clement Industries two of AbTech's recycling partners, an additional "process letter" will need to be submitted for their waste profile process along with the request. Covanta, Clement and AbTech are developing a system whereby the AbTech customer can take advantage of a national network of waste-to-energy facilities for the immediate recycling of spent **Smart Sponge**. Important factors in the acceptance process by Covanta and Clement are:

- How is the waste stream generated?
- What form is the waste in?
- What is the quantity of waste expected to be?
- Is this an ongoing or event driven waste generation activity?
- Who is the person making the determination that the waste is non-hazardous?
- How did that person come to the conclusion?

AbTech Industries as the manufacturer of **Smart Sponge**<sup>®</sup> is willing to assist in the waste profile process of the waste generator for the acceptance to Covanta or Clement's national network of waste-to-energy facilities.

Once this profile process has been conducted and the spent **Smart Sponge**<sup>®</sup> products are:

1. Accepted at the disposal or recycling facility and
2. There is no change in the process or "knowledge" of the generator for the generation of the waste,
3. Then this profile process as solid waste and acceptance to the disposal or recycling facility will continue until there is a change(s) in the process for the generation of the waste or changes in regulations effecting the facility.

Some state regulatory agencies may classify spent **Smart Sponge**<sup>®</sup> products as "Special Wastes" and may need special handling and disposal in that regard. Once again the first step that a Sales Representative must perform in order to understand the process is to identify the specific regulations that affect the customer in the State in which the customer exists.



## Disposal/Recycling Options

**Smart Sponge**<sup>®</sup> technology transforms liquid hydrocarbons into a stable solid. The handling and disposal of this solid waste is less expensive and less problematic than that of other plastic and organic solvents which will leach and leak hydrocarbons back into the environment.

The following waste disposal and resource recovery industries will accept spent Smart Sponge for disposal and/or recycling.

**Waste-to-Energy Facilities** - A specialized segment of the solid waste industry will use 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.

WTE is a participant in the Department of Energy's National Renewable Energy Program

**Cement Kilns** - This industry will use 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** - The ability of Smart Sponge to transform liquid hydrocarbons into a solid waste makes for less expensive and easy disposal. Spent Smart Sponge generated from the AbTech laboratories have been classified as a solid waste and are acceptable at Subtitle D Landfills<sup>2</sup>.

1. Generators of spent Smart Sponge will need to have their waste analyzed, tested, and classified to determine the generator's particular waste. According to testing performed for AbTech Industries, spent Smart Sponge soaked with petroleum hydrocarbons are transformed into solid wastes. AbTech does not take any responsibility for the generator's waste classification for handling, transport and the ultimate disposal or recycling of the waste. The generator must always classify and characterize its own waste.

2 Spent Smart Sponge generated from the AbTech laboratories with a multitude of liquid petroleum hydrocarbons have passed the EPA Toxicity Characteristic Leachate Procedures and Paint Filter Test. These tests are used in determining the amount of liquid waste and any free liquids present that may be released into the landfill environment.