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Fitesa Surpasses Washington Department of Ecology Stormwater Quality Standards

By Linda Barney, Barney and Associates

Fitesa is a leading manufacturer of spunbond and spunmelt nonwovens, as well as carded and airlaid nowovens. The company's headquarters and operation units are strategically located around the globe in North America, Europe, South America and Asia. Global head-quarters are located in Simpsonville, South Carolina.

The process of producing nonwoven fiber and fabrics involves taking resins of polypropylene, polyethylene pellets or cornstarch and melting the resins to turn it into nonwoven fabric. The Fitesa Washougal site has a long history in the area. The plant was opened in 1982 as part of Crown Zellerbach and the nonwoven fiber technology was developed there. The company has had various owners and is now the largest division of parent company Petropar S.A. located in Brazil. While the Washougal site is the smallest Fitesa plant, it has flexible manufacturing capabilities and also does trial work for products. Fitesa's Washougal site makes large rolls of nonwoven resin fabric that are used mainly in baby diapers, adult diapers, and feminine hygiene products; the Washougal site also creates landscape fabric, household and bedding items, as well as medical face masks and disposable medical gowns.

Fitesa Must Meet Pollution Regulations

The Fitesa site in Washougal, Washington borders the banks of the Columbia River. Because of its location near a major waterway, Fitesa is required to meet various air and water pollution regulations. They are required to meet air emission permits through the Southwest Clean Air Authority. Fitesa captures manufacturing fumes using a CVM Fume Eliminator System. JD Hisey, Fitesa Washougal Plant, Continuous Improvement Manager, indicates that the Fitesa plant produces very low emissions into the air and is in total compliance with air emission regulations. The plant is also in compliance with sewer regulations.

The state of Washington has stringent regulations relating to stormwater discharge, pollution and water quality. Fitesa is located adjacent to the William Clark state park, stormwater from the plant drains into the nearby Gibbons Creek which then empties into the Columbia River. Fitesa is required to have a Washington State Industrial Stormwater General Permit and to measure stormwater from the plant for things such as turbidity, PH balance, oil sheen and various minerals. There are strict stormwater discharge requirements that all industrial sites must meet or they face large fines.

Scope of the Fitesa Stormwater Pollution

Fitesa consistently tests stormwater but experienced problems meeting the stormwater standards for zinc and copper discharge. Zinc is used in galvanized metal, shingles, finishes in paints, and car tires—zinc is everywhere. Copper is used in items such as in brake linings and pressure treated lumber. At sites near heavily traveled roads; zinc, copper and lead get passed into the air and deposit on roofs and other surfaces. During

the next rain event, pollutants that comprise the environmental deposition become a component of the site's stormwater runoff.

The Washington state stormwater discharge limits on zinc is 117 µg/L (micrograms/liter) and copper is 14 µg/Liter. Hisey notes that Fitesa had continuous problems meeting the zinc stormwater discharge levels and occasional spikes in the amount of copper in their stormwater. On various occasions since 2004, the zinc level varied between 175 up to 500 µg/Liter and on one occasion the level went to 1,000 µg/Liter. Hisey notes that Fitesa has galvanized roofs and 10 galvanized 50 foot silos that probably contributed to the zinc discharge problem as well as the incoming hopper railcars which deliver Fitesa's raw materials. He thinks that the copper spikes relate to truck deliveries and is caused by the copper in brake linings.

Fitesa Seeks Solution to Stormwater Discharge Problem

"In 2010, Fitesa maintenance staff painted all the metal silos, and cleaned metal roofs and stairways they suspected were causing problems. Unfortunately, that didn't seem to really move the needle on the excessive zinc discharge," says Hisey. In 2011, Fitesa began looking at options to deal with their discharge compliance problem. One option was to put in a big filtration system at the end of the property—this option could be very expensive and cost several hundred thousand dollars. Hisey consulted with PBS Engineering and Environmental, a company that performs air and water permitting as well as sampling, and asked for suggestions to the problem. PBS recommended CleanWay as having affordable, pragmatic solutions to various kinds of Stormwater pollution issues.

Introducing CleanWay

CleanWay is located across the river from Fitesa in Portland, Oregon and offers a wide range of solutions to remove pollution from stormwater, process water, and industrial wastewater. CleanWay's experience with environmental services goes back more than twenty years when CleanWay President, Steve McInnis grew the company out of the stormwater services industry and into stormwater products. Because of its stormwater experience, CleanWay approaches product development with a focus on how products are serviced and maintained, ensuring an ease-of-use for the customer. The CleanWay Storm Clean™ line of products include adsorption booms, curb inlets, vault/wall-mount and column mount stormwater filtration systems. CleanWay's MetalZorb® solution is a non-toxic, biodegradable, organic polymer that is ideal for reducing, removing and recovering dissolved heavy metals and metallic ions in applications where rapid capture is required. The table below shows various types of CleanWay products and indicates the types of pollution problems each product targets.

Evaluation of the Fitesa Pollution Issue

CleanWay and Fitesa staff evaluated the Fitesa site and sub-system and determined that most of the pollution was probably coming from south side of the building. "When CleanWay engages with a customer, we talk about the 80/20 rule of stormwater meaning that 80 percent of the problem tends to come from 20 percent of the site. There are often high-traffic areas or concentrations of materials or activities that tend to cause the majority of the problem. You must consider the unique site characteristics such as: neighboring buildings, rain water flow, wind direction across the site and the type and condition of finishes on structures. Analyzing the issue is close to chaos theory, so analyzing

	Trash and Debris	Sediment and TSS	Oil and Hydrocarbon	Dissolved Zinc Only	Multiple Dissolved Metals (Zinc, Copper, Lead, etc.)	Site Specific Pollutants (i.e. VOC's, Phosphorous, and Metals)
Rigid Strainer	X					
Geotextile Element	X	X				
Adsorb-it Element	X	X	X			
Vermiculite Media	X	X	X	X		
MetalZorb Media	X	X	X*	X	X	
Specialty Media Blend	X	X	X	X	X	X

* To address oil and hydrocarbons when using MetalZorb Media, simply layer an Adsorb-it Element inside the MetalZorb Element

the stormwater problems is an iterative process to determine the solution that is needed. The closer you get to the source of the pollution, the better you can get at controlling the issue. Once CleanWay solutions are installed, they need to be evaluated and adjustments made, if indicated," states Jonathan Petersen, CleanWay Director of Sales and Marketing.

Fitesa uses CleanWay Solutions to Solve the Stormwater Issue

There were seven manholes on the south side of the Fitesa building and in the shipping truck bays. CleanWay installed a Catch Basin filtration system containing a sediment pre-filter and metals main filter in each of the manholes. The Fitesa filtration system stops trash and debris, sediment and TSS, oil and hydrocarbons, and dissolved metals at the source. Fitesa staff usually change the pre-filter once a month and the main metals filter once every 3 months (site conditions and weather determine how often filters need to be changed.) There were some initial problems with alignment of the filters but Fitesa and CleanWay staff resolved the issue quickly. Hisey reports that they also added a CleanWay downspout filter for water coming off the roof and re-routed stormwater off a side building so that it went into a manhole containing a CleanWay filter.

Fitesa is also using the CleanWay MetalZorb non-toxic, biodegradable, organic polymer to quickly absorb metals from stormwater. MetalZorb is a durable media that remains effective across a wide range of pH and can bond with dissolved metals in either anionic or cationic states. Once used, the MetalZorb media may be easily disposed of as solid waste, or valuable metals can be recovered. Occasionally, Fitesa uses a CleanWay Adsorption Boom that is used for filtration in areas such as flooding in parking lots.

CleanWay Meets Fitesa's Stormwater Needs

Hisey reports that Fitesa is happy with the solution and level of support provided by CleanWay. Matthew Moulton, CleanWay General Manager, made various onsite trips to Fitesa to determine specific needs of the site and to support any problems or special needs.

"Since implementing CleanWay solutions, the stormwater discharge levels for zinc and copper are within or below accepted standards." The accepted zinc discharge standard is 117 µg/Liter and Fitesa's 2012 discharge levels for zinc were 114, 106 and 87 µg/Liter. The copper levels are below accepted levels of 14 µg/Liter; 2012 copper discharge readings were 4, 2 and non-detectable. In addition, turbidity readings have also been reduced.

"Our implementation of the CleanWay solution is now in the Stormwater Pollution Prevention Plan that Fitesa sent to the State of Washington. CleanWay technology is less expensive than other stormwater solutions and is effective and easy to maintain," says Hisey. See the chart below for specifics on stormwater discharge pollutions levels after implementation of CleanWay solutions.

Since installing the CleanWay filtration system, Fitesa's stormwater compliance issues have been solved. We have had a long-term problem with zinc and copper discharge compliance, but the CleanWay solution has fixed our pollution problems at an affordable price.

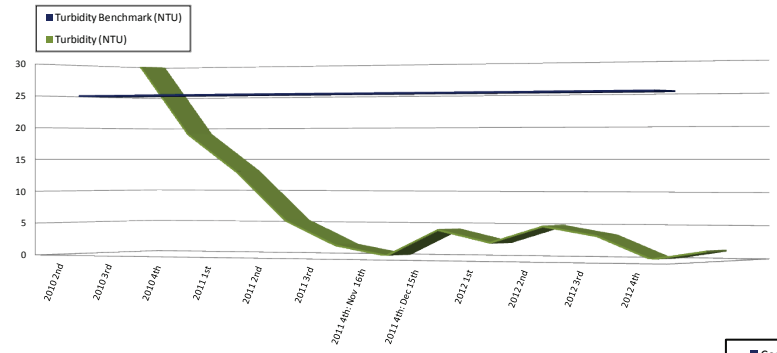
- JD Hisey, Fitesa Washougal Plant, Continuous Improvement Manager

Fitesa Washougal - Stormwater Results
Official Washington State Industrial Storm-water General Permit
Permit No. WAR-000503
PBS Project No. 17306.002
Compliance Point 01: NW Manhole

Official Data Provided By: PBS Engineering + Environmental

Year Qtr.	Turbidity (NTU)	Field pH (S.U.)	Lab pH (S.U.)	Total Zinc (ug/l)	Total Copper (ug/l)	Oil Sheen (Yes/No)	Field Temp (deg F)
Benchmarks	25	5.0 - 9.0	5.0 - 9.0	117	14	NO	-
2004 3rd	3.8	6.65	6.6	285	NA		66.38
2004 4th	12	5.4	5.3	140	6.7		54.86
2005 1st	45	8.3	6.9	258	15.8		57.6
2005 2nd	3.2	7.03	6.1	420	18		62.2
2005 3rd	32	7.03	7.3	162	66.6		65.1
2005 4th	2.3	7.03	6.8	160	ND		50
2006 1st	3.6	7.88	6.8	110	ND		50
2006 2nd	2.87	8.65	6.79	138	5.03		63
2006 3rd	20.9	6.22	6.54	589	46.2		70.2
2006 4th	17	8.05	7.2	81.4	7.97		NA
2007 1st	5	8.4	6.97	141	<5		44.6
2007 2nd	5.32	10.75	6.94	200	10.3		55.8
2007 3rd	23	8.4	6.54	1080	97.2		71.8
2007 4th	NA	NA	6.29	109	<5		NA
2008 1st	2	7.79	6.79	174	5.44		47.5
2008 2nd	3.9	8.5	6.7	203	5.62		58.5
2008 3rd	NA	NA	NA	NA	NA		NA
2008 4th	4.7	5.72	6.65	219	7.99		56.5
2009 1st	6.3	9.35	6.45	282	1		48.4
2009 2nd	4.9	7.29	6.64	149	<5.00		8.3
2009 3rd	18	7.01	NA	443	22.4		14.3
2009 4th	15	7	7	150	<5.00		NA
2010 1st	10	6	NA	174	<4.0	No	NA
2010 2nd	30	5.8	NA	344	277	No	51.3
2010 3rd	19	6.2	NA	87.9	8.61	No	NA
2010 4th	13	6.4	NA	349	10	No	NA
2011 1st	5.3	6.1	NA	589	7.2	No	NA
2011 2nd	1.5	5.8	NA	224	21.3	No	NA
2011 3rd	NA	NA	NA	NA	NA	NA	NA
2011 4th: Nov 16th	4.1	6.5	6.9	175	ND	No	NA
2011 4th: Dec 15th	2.2	5	6.76	306	ND	No	NA
2012 1st	4.8	6.8	6.99	114	4.3	No	NA
2012 2nd	3.4	6.3	6.97	106	ND	No	NA
2012 3rd	NA	NA	NA	NA	NA	NA	NA
2012 4th	1.3	6.75	6.44	87.3	2.02	No	NA

Fitesa Turbidity Sample Data with CleanWay Filters



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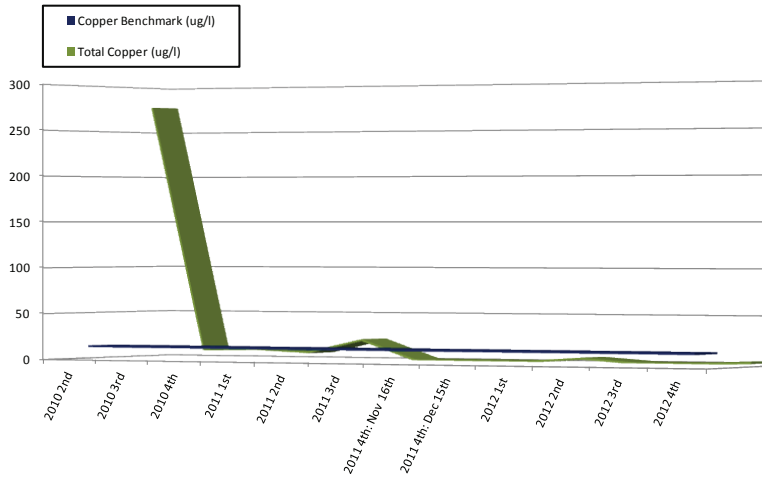
>
> *Jonathan Petersen*
> *CleanWay Environmental Partners*

Fitessa Copper Sample Data with CleanWay Filters



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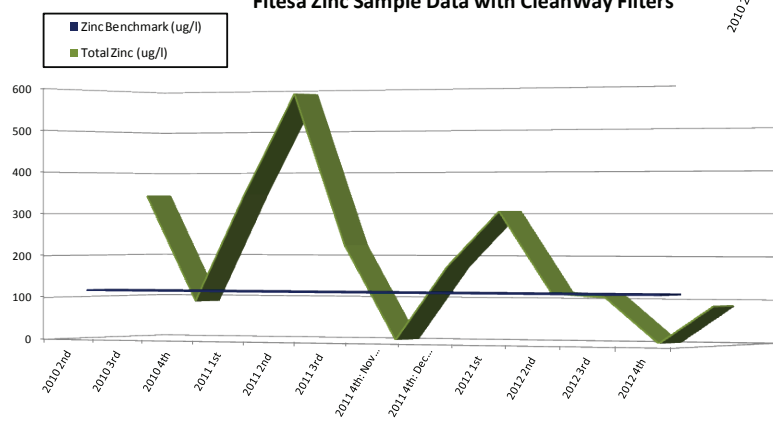
>
> *JD Hisey - Fitessa*

Fitesa Zinc Sample Data with CleanWay Filters



For more information visit www.cleanwayusa.com or call 800.723.1373