

**WWT Effluent Filter Meeting Summary**  
**Teleconference**  
**February 2, 2012**

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Meeting Attendees			
Company	Name	Interest Category	Role
Orenco Systems, Inc.	Jason Churchill	General Interest	Observer
NSF International	Mindy Costello	Other	Observer
Zoeller Co.	Gant, Eric	General Interest	Guest
Polylok	Peter Gavin	Industry	Member
Orange County Health Department	Tom Konsler	Public Health / Regulatory	Group Chair
Simtech Filter, Inc.	Gary Koteskey	Industry	Member
Norweco, Inc.	Jim Meyer	Industry	Member
Tuf-Tite Corporation	Ted Meyers	Industry	Member
Bear Onsite, LLC	Theo Terry	Industry	Member

Mindy Costello, secretariat read the NSF Anti-Trust Statement and attendance. Tom Konsler summarized the charge of this task group:

1. Air/gas transfer through the filter as it is installed in the operating position in the tank and
2. field performance and longevity of the filters. These were two issues were introduced and discussed at the last meeting.

#### **Air Transfer**

The group discussed the air/gas flow issue in an attempt to get consensus that this is an important functional issue. Some points of this discussion include:

- A 4" tee without a filter provides around 12.5 square inches of free flow of gas.
- ASTM specifies a minimum 9 square inch open area at the baffle wall for gas passage.
- Friction loss in the house plumbing system to the roof vents present further restrictions to gas flow.
- Pump systems would present another blockage of air travel from the drainfield to the roof vents
- There could be other barriers built into the system such as a baffle wall without a gas passage orifice at the top, or areas where plumbing codes require a gas trap or a check valve in the building sewer.
- There was no agreement or complete understanding which way the gasses flow in a system and what benefit or detriment that may cause.
- Conventional systems don't typically have an active vent to the atmosphere beyond the tank, so it is questionable how much air passes through the top of the tee or filter with the restriction of the soil backfill over most systems.
- There was concern that systems in extreme cold climate areas might be harmed by bringing cold air into the tank environment which could be detrimental to bacterial action.

The Presby argument was based on California test data (WERF) Evaluation of Greenhouse Gas Emissions from Septic Systems where the tanks were older and no assurance there was gas passage slot in the baffle. The test data measured flow on only two tanks.

Rather than eliminating the filter requirement specifically for the Presby systems ( as was done in Indiana), they should have considered that there are filters on the market now that provide more open space for gas passage than an open 4" tee. Also, other means of providing vents where needed could be specified if it is important for

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the treatment components downstream of the tank. The group was reminded that we are not tasked with solving the Presby system problems, but to focus on the gas passage issue for any system with a septic tank effluent filter.

The group discussed the standard could include a prescriptive requirement for all filters to have a minimum open area above the operating level (while still providing overflow bypass of solids) for gas passage. This would likely drive the market toward larger filters or a major re-design of filter configurations.

This was followed by a discussion of performance measurements that could be included by having a bench-test apparatus to measure the rate of flow (CFM) through the headspace of a filter at a specified pressure.

Theo T. also described filling a container with a gas of known concentration with an open tee as the outlet orifice and measuring how much flow by gravity passed through it. This could then be compared with a tee fitted with a filter.

At the end of the discussion, there was no agreement that a filter, which may impede air/gas flow between the headspace in the tank and the outlet pipe, would cause a problem with the proper functioning of a wastewater system. There was not enough information presented that established that a problem exists. The group discussed a few action items in an attempt to get more information on the topic.

**Action Items**

1. Find research documentation that establishes the movement of gas through this area of the system; which way do gases flow? particularly if there is no downstream air vent. Is there any benefit or detriment to the functioning of the tank as a result of gas flow?
2. Are there configurations or codes that introduce other impediments to the flow of gases? (traps, check valves, etc.)
3. Is temperature of the air important to the tank or treatment system function?
4. If air movement is important, what should be the minimum require opening? This should be based on science/research to show there is an issue to address.
5. More information from Dave Presby would be helpful. He should be asked to provide more qualitative information on what his system (as well as other systems) needs for gas passage. Are there alternative ways to provide this?

**Longevity and field performance**

The document "Flow-Through Device.pdf" was posted for the group's discussion. The pink line in the graph shows the rise and fall of the tank operating level when 80 gallons of water is introduced (4 GPM over 20 minutes) with a clean filter in place; the blue line is that same filter which has matured over time, and the yellow line shows the incoming test flow as if there were no tank outlet. This exercise showed the restriction over a period of time for filter flow-through restriction. It also shows different flow characteristics for different designs of filters. Both filters described in the graphs were 4 inch filters, two different brands represented.

Mature filter measurements were taken without touching anything in the tank; after the data points were collected, the filter was cleaned and then returned to tank for another series of measurements. The purpose of the graphs from Orange County were to illustrate that quantitative representations over time can be made. There was no correlation attempted to relate filter curve performance with filter orifice area, although the filter brands and designs are known.

The value of this type of field performance measurement would be to satisfy some jurisdiction requirements that filters be required to last for a certain length of time under normal operating conditions. Although some states have these requirements, there is no data to show what the longevity of these filters are (e.g., 2-3 years or

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longer). Regulators heard concerns with filters having maintenance issues. The second issue was there is an endpoint with the filters. The market will have to be changed to show a better performing product and show a reason that consumers should pay for this better performing product.

It has been assumed that a filter with greater slot area would be a better performing filter for a longer period of time. Research is needed to determine if this is correct. There are other ways to make a filter last longer than just increasing slot linear area.

A performance/longevity test protocol would be worth pursuing. It should be recognized that there are several variables that must be considered when evaluating outcomes. Variability between households will be a challenge. This would have to be tested with statistically significant numbers of test sites and a process that would allow rejecting test sites that represent outliers (such as inappropriate use of septic system). The group discussed either additional criteria to Std 46, revision of Std 360 to include filters in the scope, or a stand-alone field performance standard using Std 360 as a basis. NSF and other independent third parties would be set up to perform this type of testing.

Tom asked for input on these discussions for him to draft language for the group to review.

**The group will meet in mid-March.**

#### NSF STD 46 Effluent Filter Task Group

#### Discussion of Longevity test for Effluent Filters

Image showing the device used to measure the liquid level and the flow control on the inlet end.

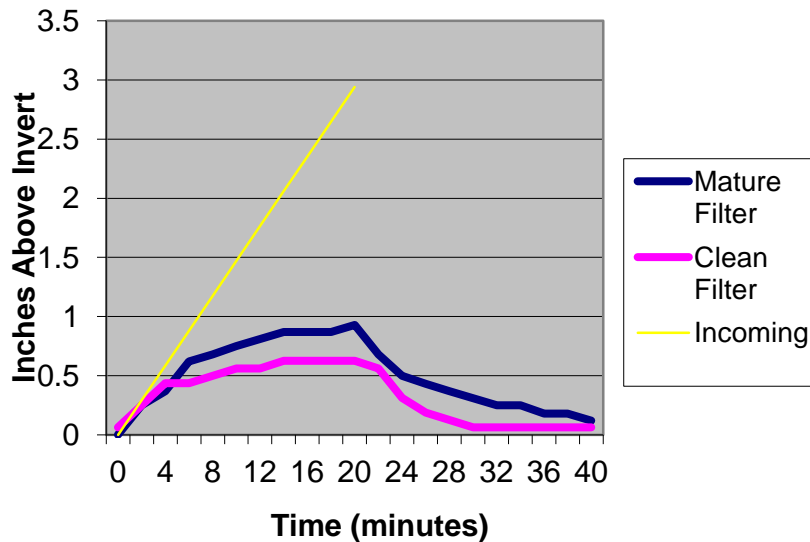


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Measurement of operating level at the outlet chamber of septic tanks was conducted while introducing incoming flow at a rate of 4 GPM for a period of 20 minutes. Below are the plotted operating levels over a 40 minute period showing the rise in the operating level and subsequent return to normal operating level after terminating the incoming flow. These two examples show two sites with different brand filters and different system ages.

**Site 109\_Filter A - 3 Years in service**



**Site 113\_FilterB - 2 Years in service**

