

**Chamber and Bundled Expanded Polystyrene Technical Advisory Committee  
Virginia Department of Health  
April 18, 2013**

**List of Attendees at Central Location**

Technical Advisory Committee Members

David Lentz - ISI	Tim Woods - ISI	Brian Parker - Eljen
Robert Savage - Eljen	Damon Hunley – ADS	Pam Pruett - VOWRA
Sandra Gentry - Installer	Dan Richardson – VDH	Jeff Walker – VAPSS
Rick Blackwell - VSPE	Joel Pinnix - ACECVA	

VDH

Peter Basanti	Patrick Bolling	Marcia Degen	Lance Gregory
Allen Knapp	Dwayne Roadcap		

**List of Attendees at Remote Locations**

Technical Advisory Committee Members

Scott Honaker - VDH      Bill Southerland - PE

**1. Administrative**

Welcome and Introduction of TAC members.

Mr. Gregory: Welcome and review of guidelines for CBEP TAC.  
Introduction of CBEP TAC Members.

Approve Agenda

Mr. Gregory: Request for additional agenda items or topics.

Mr. Lentz:

1. Discussion of the rule and the transition of policy to rule, Section 448.A. Understand intent of moving policy into regulation. Discuss intent of the bill.
2. Discussion of the GMPs affected by the changes proposed.

**2. Background**

GMP #102, GMP #116, GMP #127, and GMP #135

Mr. Gregory: I'm sure all of you are familiar with our existing policies, three GMPs, 116, 127, and 135. A copy of those policies was provided to each TAC member. GMP 116 was

introduced in 2002. This GMP sets limitations for non-gravel systems, sets specific design parameters for those materials, contains a requirement for owner's consent, stipulates that non-gravel systems be installed according to the manufacturer's recommendations, requires manufacturer training of installers, requires manufacturers provide an installation manual, requires a product warranty, and sets financial assurance requirements for manufacturers. GMP 116 states, under the "Waiver" section, that any manufacturer meeting the requirements of this policy for a specific substituted system shall be deemed to have met the requirements for a provisionally approved system and shall be considered a system with general approval pursuant to section 448 of the Sewage Handling and Disposal Regulations (SHDR).

GMP 127 contains information on design criteria and physical properties of non-gravel systems, including some additional parameters not included in GMP 116. Under the "absorption area size and volume" section, this GMP set parameters for effective width compared to gravel trenches, storage capacity, and minimum height requirements.

GMP 135 sets similar parameter to those contained in GMP 116. One notable difference with GMP 116 is the sizing reduction. GMP 116 allows for up to a 50% reduction, while GMP 127 discusses a 1 for 1 replacement, and GMP 135 allows for up to a 25% reduction.

#### House Bill 1726

Mr. Gregory: Within the packets you received is a copy of HB1726. This legislation sets out criteria for the emergency regulations, specifically that the emergency regulations shall set requirements for physical construction, width, height, storage requirements, a permeable sidewall of the absorption area, criteria for slope, length, minimum lateral separation, method for substituting for gravel and LPD, and criteria for minimum area requirements for chamber and bundled expanded polystyrene effluent distribution systems. Section 4 of the legislation provides a broad approach, stating that regulations for other effluent distribution system technologies may be created as deemed necessary by the Board of Health.

Some of the initial comments we have received discussed Part 4, regarding other distribution products.

Mr. Lentz: The intent of this bill is to move GMP 135 from policy into regulation; that is the intent of the rule, to move the policies into regulation. We are not re-inventing or creating new requirements, simply proposing to take what has been in existence in GMP 135 and roll it into the rule. The sizing we are talking about is the 25% reduction.

Mr. Walker: Do I have to use a 25% reduction?

Mr. Lentz: No, you are free to use any sizing you like as long as it does not exceed 25 percent. We have draft rule language that we gave to VDH; however nothing has been finalized or developed. We took requirements in GMP 135 and created draft code language, we did not include the warranty or the financial assurance requirements.

Over time, as systems have proven themselves, the warranty and financial assurance requirement would not be necessary. We are in favor of strong warranties as long as it is applied across the industry. We could not find another technology that required a 5-year warranty. We feel like if we need a 5-year warranty, then we need it across the board.

Mr. Woods: For marketing and liability, we have extended warranties up to 10 years. If there is concern about the warranty, we will still provide that, there is no change on the company policy. We are not proposing anything new. We made a change in conceptual sizing to modify terminology to clarify that consumers are not getting some less. The concept is that you are getting something that is on par with gravel trenches. We are proposing a rating to a specific product, take square feet per bedroom divide by sizing factor to get your required linear feet. We've seen it work in other jurisdictions.

On the topic of future GMPs, GMP 116 should be phased out; the reason is that you wouldn't want two sets of sizing criteria. GMP 116 should no longer be in effect, GMP 135 should be rolled into the regulations. GMP 135 may still be needed; perhaps we could include other technology.

Mr. Walker: I've been following these products for over 10 years and there is anecdotal evidence of structural problem. VDH hasn't kept track of it. What's your perception and anything that we could do to protect consumer and designer from substitutions by a contractor or some other third party. Does ISI, through their warranty claims, track reasons for failures? There are annual records sent to VDH from manufacturers, have they looked at those?

Mr. Lentz: Have you obtained the documents given to VDH?

Mr. Walker: There are two issues. One, your performance bond is a function of tracking failures and a percentage of coverage looking forward. My point is that when the consumer receives a drainfield product, if they make a complaint to VDH it may not be a complaint to your company. The system may use gravel or something else. What is the data for when these systems failed? Was the cause of failure design or was it faulty installation? Why are there so many contractors that shy away from these products?

Mr. Lentz: For background, do you have information that you have compiled over the years.

Mr. Walker: No, I want to know the modes of failure, any one failure is extremely important. What are the problems and where is this information captured? Does VDH have a tracking system?

Mr. Gregory: We have a malfunction report that captures reason and type of failure; it's relatively new.

Mr. Richardson: I'm not sure that report captures the level of detail you are discussing.

Mr. Lentz: We have some specific numbers from specific counties. The data won't tell you why the system failed but can give you a rate.

Mr. Woods: One of the counties started a rumor of massive problems; after looking at the numbers they were surprised.

Mr. Lentz: Loudoun County has data tracked back to 2001 on a variety technologies. The data shows a 0.95% failure rate on over 13,000 installations for gravel systems. For non-gravel systems, multi-pipe included, there were 558 installations with 6 malfunctions. On a statistical basis this is about the same rate of malfunction. Most of the systems that failed were installed under GMP 116. We are going with the more conservative rates in our proposal. We have other studies as well. Virginia's sizing requirements are some of the largest system requirements in North America, very low loading rates.

If you combine the Loudoun study, even with the smaller footprint, there is no difference in the rate of malfunction. As for the reason for the malfunction, there is a spreadsheet, but it is not very specific.

Mr. Walker: Are these numbers systems installed or units installed?

Mr. Lentz: Drainfields installed. Looking at the annual reporting for chambers since 2002, 28,000 drainfields have been installed with 76 problems. No warranty claims but that doesn't mean systems haven't malfunctioned, only that we didn't get a warranty claim. If we had a broad based sizing issue, we would be getting phone calls. We have a lot to lose if we have a high failure rate, we are a nationwide manufacturer. I think this information is consistent with Loudoun County and other states.

Mr. Richardson: So the goal is to take GMP 135 and codify it? Could we move all of the policies into the regulations? We are not limited to eliminating just GMP 116.

### **3. Purpose and Goals for TAC.**

Covered under guidelines for TAC.

### **4. Identifying concerns and discussion topics**

Mr. Gregory: House Bill 1726 lays out some specific items that must be included in the emergency regulations. We have multiple meetings set up for this TAC. We'd like to go through each of the specific items, identify concerns and discussion topics for these items and also include additional concerns and discussion topics that fall under the broader section of the bill. After that the TAC could prioritize concerns and then review the proposed language.

Mr. Walker: The issue of substitutions by contractors is my biggest concern.

Ms. Pruet: That is a huge issue. The contractor is becoming the designer. Putting the contractor into a design position is a mistake that VDH made. Material specifications are designer decision.

Ms. Gentry: If the soil evaluator has made any mistake during the soil study, and the contractor takes a full substitution, then the mistake is amplified.

Mr. Pinnix: This is sort of a DPOR issue and it's a statutory issue. There are two designers in Virginia, OSEs and PEs. If VDH tells a contractor he has the authority to make a substitution, and he's not an OSE or PE, then he is practicing engineering without a license. That goes beyond the engineering board, that's also a misdemeanor. That is in the code of Virginia, practicing without a license. What is happening by policy is that VDH is condoning the practice of engineering without a license.

Mr. Walker: Taking a reduction changes hydraulic and organic loading, and affects the distribution. I think it is a fine product under the care of a designer. Once we come to terms with that, changing the regulations won't create heartburn.

Mr. Woods: This is how we've handled this concern in other states. We have been approved at an equivalency factor, instead of a reduction. We could have an either/or option on the plans. The local VDH staff would be specifying proprietary product, approved under an equivalent manner. VDH could write on its permit, the required square feet for gravel trenches or its equivalent, and then VDH gets by the proprietary product issue. Let's everyone work from the same starting point by being on the permit. That's one way it's been handled.

Mr. Walker: The public sector is designing with one hand behind its back. VDH restricted VDH OSE employees from limiting the extent of the substitution. This is a hands off policy. Part of the problem is the full reduction on publicly designed permits and nobody took into account hydraulic or organic loading.

Ms. Gentry: The failures we have seen have been almost exclusively with full reductions.

Mr. Blackwell: The code and regulations are different. We are talking about regulations. What constituted the emergency in Virginia that we need to do this quickly? There is no public health emergency, but it is a way to expedite the process. For me, as a PE, the emergency may have a different meaning than it does for others.

Mr. Lentz: There is not an environmental or public health emergency. The legislature has used this process in the past to expedite and compress rule-making. Fast track doesn't mean fast.

Mr. Blackwell: The emergency is that the GMPs have been here for a while and we want to get them into the regulations. There is another issue. Some people thought that the emergency was to roll back some of the issue people were finding with loading rates, failures, etc. There thought was that this is a chance to fix bad practices of the past. There are a lot of counties that have banned the use of these products.

Mr. Pinnix: Local ordinances apply to 15.2 of the code of Virginia. The Attorney General's opinion only affects AOSS, they have the authority.

Mr. Woods: From a service standpoint, you can't fix a problem if you don't know about it.

Ms. Pruet: There is a lot of value in what Mr. Blackwell is saying. It's easier to just fix the problems now.

Mr. Woods: As a manufacturer, we want the opportunity to help.

Mr. Walker: A warranty only deals with the product, not the whole fix. The first issue is a lack of design authority. We should be able to agree on it today. Who is the designer? How can we address issues for citizens? With 12,000 installations, even a small percent failure rate is a lot of systems.

Mr. Lentz: In Loudoun County the failure rate was 1%. People overload the system; it's the same issue for gravel. Loudoun didn't see a statistical difference between stone and chambers. We don't want to be in the dispute of public/private design, it's unresolved. Whatever DPOR requires today will not change. We won't get into that dispute.

Mr. Pinnix: If a private designer doesn't certify the work, the applicant can ask VDH to certify the work. At that point, VDH has something that is compliant with their GMP and approves the installation. This is a problem. If it is not a problem for here, the problem is still valid. Contractors cannot make any substitution, but that's not the way it is working today.

Mr. Lentz: My understanding is that the VDH does not intend to address this issue.

Mr. Richardson: As soon as we say equivalent, then you can't turn it down. We can word it differently. These products give you a certain application rate. Designers and those who oversee design, we need to know that the system will be installed the way we designed it.

Mr. Walker: It's easy to put in a substitution clause. VDH is tied to the substitution. If we give a 25% reduction, the OSE must sign off on it. If it is a pump design, it's a hydraulic issue with a smaller absorption area.

Mr. Honaker: One of the things that strikes me, you mention pump and equivalent design. Where is the "in-equal" design between gravel and chamber? Design of the pump should be equal for equivalent products.

Mr. Walker: For pump designs we assume 4-inch pipe volume and length. When using chamber products I exercise my design authority and include gravel as energy absorption at the front of the trench.

Mr. Honaker: We need to discuss enhanced flow and piping in non-gravel products. I would like to see the pipe extend the length of the trench and not only 10 feet into the trench. This would saturate whole line. If we are talking about equivalency, what's the difference between gravel and polystyrene?

Mr. Woods: Testing at SVCC demonstrated that flow only goes about 8 feet before it disperses with enhanced flow. This is the reason for the pipe reduction to 10 feet. We do have high flow splash plates that reduce the energy of flow from a pump. There are a few counties requiring corrugated pipe.

Mr. Walker: Designer needs to address the issue of how fast we dose and distribution across the trench. There should not be an equivalency except in the designer's repertoire.

## **5. Prioritize concerns and discussion topics.**

Each TAC member was given two note cards and asked to write down their top two concerns/discussion topics. The cards were collected. Similar concerns and discussion topics were consolidated into a list of eight discussion topics. Each TAC member was given 5 dots and was asked to place the dots next to the discussion topics that are the highest priority to them. The results of this process were as follows (listed with highest priority first):

1. (13 dots) What should the area/loading rates and requirements be?
  - 25% reduction.
  - Finer texture soil.
  - Small flows article/NOWRA.
  - 15% reduction, GMP 135 for texture group IV soils.
2. (11 dots) Who specifies the product?
  - Use of term equivalency? Sizing factor.
  - Design authority – designers, VDH, no contractors.
  - VDH should be able to specify.
3. (8 dots) What happens to GMPs 116, 127 and 135 once regulations take effect?
3. (8 dots) What happens to other gravelless technologies?
  - Future technology.
  - Broad scope for approved technology.
4. (7 dots) Remove and place into regulations the operation of GMPs 116, 127 and 135.
5. (5 dots) Failures.
  - Too many.
  - How to track.
6. (1 dot) Word our future regulations such that no dispersal media is measured against any other dispersal media.
6. (1 dot) How to design.
  - Gravity.

- Pump.
- Enhanced flow.

Also reminded the TAC members of the specific required elements from the bill which are:

- Specification for the physical construction of chamber and bundles expanded polystyrene systems including:
  - Minimum exterior width.
  - Height.
  - Effluent storage capacity.
  - Structural capacity.
- Requirement for a permeable interface between chamber and bundled expanded polystyrene effluent distribution systems and trench sidewall soil surfaces.
- Criteria for:
  - Allowable slope.
  - Maximum length.
  - Minimum sidewall depth.
  - Minimum lateral separation.
- Criteria for substituting chamber and bundled expanded polystyrene for gravel percolation trenches and crushed stone LPD.
- Criteria for determining the minimum area requirements for chamber and bundled expanded systems.

## 6. Discuss ISI proposal.

Mr. Lentz: We drafted some suggested changes and VDH made some comments. The version provided to TAC members is not final, we eliminated the use of the phrase “equivalency factor” and renamed it “sizing factor”.

We’ve proposed two categories (Category 3 and 4) based on minimum exterior width. The idea is to use GMP 135 sizing, taking the 25 percent reduction and incorporating it into the rule. Take the minimum length of a gravel system and multiply by .75. Another way to do it would be using a sizing factor. This is used by other states. This takes the area requirements in Table 5.4, the sizing chart for stone, and the required square feet is divide by the sizing factor in proposed Table 5.6. The units would be in linear feet.

To come up with a design area, simply multiply it by .75. There is a requirement that the lines be as long as possible.

Mr. Pinnix: If I have a 38 rate soil that requires 200 ft<sup>2</sup>/100 gallons and divide 200 by 4, I get 50 linear feet. If you are using 4 ft<sup>2</sup>, it has a built in 75 percent reduction.

Why do we need any reduction at all? You are not obligated to change the sizing, minimum trench length, or take the maximum reduction. Would a whole reserve area be required with these products? How do you elect to change the permit language? What happens with secondary effluent? You are using a completely separate table. We should know whether we are talking about septic tank effluent or secondary effluent.



Mr. Lentz: We don't advocate "double dipping", adding a reduction on top of a reduction.

Mr. Parker: From manufacturer's perspective, we do not advocate double dipping. We need a safety factor built into the system.

Mr. Walker: If you remove the clogging then there are different loading factors. Would you want 75% reduction in sizing? When does the reduction become excessive?

Mr. Blackwell: A couple of calculations seem awkward regarding the sizing factor, Category 3 and 4. These calculations limit other products. Why not just do it on trench bottom and a percent reduction of that area. This could be an additional column in Table 5.4 or a Table 5.4.a.

Mr. Lentz: We have 16-inch wide chambers but people use the 22-inch and 34-inch chambers. Someone could make a 26-inch wide chamber, but where would they use them?

Mr. Walker: If equivalent with rock and pipe I don't see why it's a problem to taking an additional reduction with secondary effluent. Manufacturers aren't saying these products are equivalent; they are saying its better. Evidently there is no evidence of failure so let's put them in the regulations and let designers use them at their discretion.

Ms. Pruet: We need manufacturers to support this for secondary effluent.

Mr. Lentz: Virginia would be the only jurisdiction to allow double dipping,

Mr. Parker: We want to tell our customer this is the maximum we feel comfortable with. I don't want to sign up for that.

Mr. Pinnix: I'm looking at the product [bundled expanded polystyrene] and that looks like a gravel trench. I know from dealing with sites in Mathews and Lancaster that we have STE system that have lasted 40 to 50 years. We can take a 25 percent reduction based on an abbreviated review time but I don't understand why we would allow a reduction on a product that is similar to gravel.

Mr. Lentz: Plastic chambers and bundled expanded polystyrene have been in use for 25 years. For bundled expanded polystyrene, without the fines that are present on the surface of stone and in stone system, the hydraulic performance improves. ISI pursued open trench bottom with chambers to increase contact area and found that performance improved for absorbing wastewater. In 2008, Wisconsin regulators measured the contact area of loaded products with 2-foot of soil equivalent load and found a 5% contact area for bundled expanded polystyrene. It's counter intuitive, but ICC Technologies, ISI and EZ Flow products come out the same. Is it lack of fines or contact area? Could be both. The architecture of these products is what makes the difference. However, the industry does not support "double dipping".

Mr. Richardson: I look at it a little differently. Manufacturers have a product, it can work. If you are going to use this product, then we spell out how you can use it. All products vary in what they address. How about a separate application rate for each product?

Ms. Pruet: Get rid of sizing factor, this adds an element of confusion. How about a secondary table? We can simplify it in the 610 regulations, but you also have the 613 regulations where an OSE uses Table 1.

There seems to be an issue with finer grain soil such as silty clays. One of the NOWRA conferences specifically talked about heavier texture soils; you started getting more ponding with non-gravel products. Biomat production is higher in slower soils so you should have less of a reduction. Suggest that for 60 or 70 rate soils and up we only allow a 15 percent reduction.

Mr. Parker: Texture group IV soils in GMP 135 are allowed a 15% reduction.

Mr. Pinnix: In the SHDR, at a 45 rate, you have a hydraulic loading rate of .44 gallons per day per square foot. In the 613 regulations, for a 45 rate soil, the maximum loading rate is 1.2 gallons per day per square foot, which means less than half the area.

Mr. Parker: Whatever chart that gets created, can we make it a generic chart so it is not product specific. We don't want to stifle innovation. If there is a new technology, instead of going through this all over again, have some sort of fall back to get a product approved that is similar.

Mr. Walker: It appears VDH uses the manufacturer's data. It's a black box that has become interchangeable. Is it a worthy goal to get a 25 percent reduction? Siegrist was ahead of his time, started out with water and marbles, and then he played with dirt and then effluent. I have full trust in designing with data.

## **7. Discuss next steps.**

Will meet again next week on the 23<sup>rd</sup> from 10AM to 4PM. We will delve into it more deeply and look at the information provided.

## **8. Adjourn.**

## Appendix 1

### Chamber and Bundled Expanded Polystyrene Technical Advisory Committee Meeting

**Date:** April 16<sup>th</sup>, 2013  
**Time:** 1:00 pm to 4:00 pm  
**Location:** Mezzanine  
VDH Main Conference Room  
109 Governor's Street, Richmond, VA 23219

#### Meeting Agenda

1. Administrative.
  - A. Welcome and Introduction of TAC Members.
  - B. Approve Agenda.
2. Background.
  - A. GMP #102, GMP #116, GMP #127, and GMP #135.
  - B. House Bill 1726.
3. Purpose and goals for TAC.
4. Identification of concerns and discussion topics.
  - A. Concerns and discussion topics provided prior to TAC meeting.
  - B. Additional concerns and discussion topics.
5. Prioritize concerns and discussion topics.
6. Discuss ISI proposal.
7. Discuss next steps.
8. Adjourn

## Appendix 2

### Chamber and Bundled Expanded Polystyrene Technical Advisory Committee Guidelines April 16, 2013

The creation of a TAC is the creation of a public body. TAC meetings are open to the public, and are subject to the provisions of the Virginia Freedom of Information Act. Meeting minutes are taken and posted on the Virginia Regulatory Townhall website ([www.townhall.virginia.gov/](http://www.townhall.virginia.gov/)).

Meetings are noticed at least seven (7) working days prior to any meeting.

Agenda's are posted on Townhall at least 3 days prior to the meeting.

Draft of minutes must be posted within 10 days after the meeting with a final posted within 3 days of approval of the minutes.

The purpose of the TAC is to assist in the development of proposals to address the emergency regulations as required by Chapter 202 of the 2013 Acts of Assembly. The TAC has been formed to help the Department balance the concerns of all those interested in these emergency regulations. All such concerns will be addressed by the TAC, and any member of the TAC is free to advance any opinion.

The role of the TAC is advisory only. The TAC's primary responsibility is to collaboratively contribute to the development of proposals to address the emergency regulations in the best interest of the Commonwealth as a whole.

The goal is to reach a consensus on how best to address development of the emergency regulations in a manner that will be protective of human health and the environment.

**Consensus** is defined as a willingness of each member of the TAC to be able to say that he or she *can live with the decisions reached and recommendations made and will not actively work against them outside of the process*. This is not to say that everyone will be completely satisfied by the result of the process. It is necessary; however, that each participant comes prepared to negotiate in good faith around complex and sensitive issues.

Also, because the group represents many different interests, all members should expect to **compromise** in order to accomplish the group's mission. If the TAC cannot reach consensus, the Department staff will present the differing opinions to Department management and the Board.

Because TAC meetings are public meetings, any member of the public may attend and observe the proceedings. However, only TAC members have a seat at the table and participate actively in the discussions. Those persons not on the TAC are encouraged to work with and through the TAC members that have common interests to ensure that their concerns are heard.

As warranted, the Department will provide access for non-TAC members to make their concerns known to the TAC during meetings, to ensure full consideration of all issues surrounding the emergency regulation in question, provided it is not disruptive or does not inhibit the advancement of the work of the TAC. Time limitations may be necessary in order to ensure that all persons have an opportunity to address the group.

- Please mute or turn-off your cell phones to minimize interruptions. You can reconnect during the breaks.
- Listen with an open mind and heart – it allows deeper understanding and, therefore, progress.
- Speak one at a time; interruptions and side conversations are distracting and disrespectful to the speaker. “Caucus” or private conversations between members of the audience and people at the table may take place during breaks, not during the work of the group.
- Be concise and try to speak only once on a particular issue, unless you have new or different information to share.
- Simply note your agreement with what someone else has said if you feel that it is important to do so; it is not necessary to repeat it.
- If you miss a meeting, get up to speed before the next one, as the TAC cannot afford the luxury of starting over.
- Focus on the issue, not the speaker – personalizing makes it impossible to listen effectively.
- Present options for solutions at the same time you present the problems you see.