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Mr. Westersund,

I am concerned about four elements in the proposed changes to OAR 340 division 244. Individually they are relatively benign but when considered together have the potential to increase the scope of these rules sufficiently that they could be applied to any art glass process and facility that uses furnaces or kilns to create art glass, specifically kilnwork and off-hand glassblowing, and potentially down to the level of the small hobby kilnworker or glassblower.

If this came about it would have a drastic negative impact on the glass art in the State of Oregon. Further, if these rules are copied by other States or on the national level (a distinct possibility) this could seriously harm the glass art in the United States.

I don't believe this is the intent of Oregon DEQ, and I would respectfully ask that these items be examined in this light for possible refinement so as to better define the target facilities and processes.

These items are:

1. Lack of a specific definition for the term "melt" and use of the phrase "molten glass" for the purpose of enforcing this rule.
2. The current definition of a "glass-making furnace" is so broad that it effectively includes the kilns, glory holes and small crucible kilns used in nearly all working studios.
3. The current definition of any colored glass as a raw material.
4. The Fiscal Advisory Committee is on record as suggesting that the trigger level be lowered from the current 10 tons yearly to as little as one pound.

Item 1: Lack of a specific definition for the terms "melt" and use of the term "molten glass."

Glasses are solids with a unique property - above a certain temperature, they have the ability to move and flow while still in solid form. To those unfamiliar with this phenomenon, they appear to be in a liquid state. This leads to a lot of confusion centered around the term "melt" in the glass art (and elsewhere) to the point where it is fair to consider "melt" an abused term. The phrase "molten glass" is an oxymoron; once glass melts it is not glass anymore, it's a liquid.

The process of making glass is this: mix up a batch from a recipe, heat it until it has fully liquefied, then cool it slightly and wait for the glass matrix to "drop out" of the liquid precursor. If the glassmaker got the recipe right there will be no liquid component in a fully mature glass batch.

This is important during this rulemaking for two reasons: first, during the melting process and while the batch is fully liquid is when most (possibly all) of the heavy metals escape to become HAPs. They either get carried out along with the out gassing of raw batch materials, as part of the exhaust stream in an air/fuel furnace, or boil out of the liquid melt. It's the process of making this melt that needs to be regulated. Once the glass matrix forms the remaining metals are trapped and can't go anywhere.

The second reason is that confusion about "melt". This rulemaking is about limiting or eliminating HAPs in the process of making new glasses. Processes that then use these glasses to make art or products (kilnwork, lampwork, glassblowing) don't emit HAPs and it should be made clear that they do not fall within the scope of these rules. This becomes especially important if the trigger weight is reduced; if the trigger levels are lowered enough, potentially all kilnwork and glassblowing could be regulated under this rule.

It is my understanding that the DEQ has no desire (or need) to regulate this activity; let's explicitly write it out of these rules.

If this is not true and DEQ staff has found evidence that these processes do indeed emit heavy metals as HAPs, please make this information publicly available so that kilnworkers and glassblowers can adequately protect themselves and the people around them.

My suggested solution is:

1) Define "melt" as: "The process of bringing a mixture of raw materials (possibly including glasses) to a fully liquid state for the purpose of creating new glass."

And

2) remove "molten glass" from the text to avoid ambiguity.

Item 2: Definition of a "glass-making furnace" as "a refractory-lined vessel in which raw materials are charged and melted at high temperature to produce molten glass."

Given the lack of a definition for "melt" and the use of the oxymoron "molten glass", "a refractory-lined vessel in which raw materials are charged and melted at high temperature to produce molten glass" describes nearly every heat source used in most working studios; kilns, glory holes and small crucible kilns all fit this definition. This equipment is not used for making glass, but serves to reheat glass materials as they are transformed into their final form. None of these devices produce HAPs. Without better definition of the glass-making processes you are trying to regulate, someone unfamiliar with the technical intricacies of the glass art could decide that these devices and activities fall within the scope of these rules. Again, lowering the trigger weight has a huge effect, potentially including every kiln down to the hobby level.

Solution:

1) Change the definition to read "a refractory-lined vessel in which raw materials are charged and brought to a fully liquid state for the purpose of making new glass. Vessels used solely for reheating glasses are not considered furnaces for the purposes of this rule."

Item 3: definition of any colored glass as a raw material.

The purpose of this rulemaking is to prevent the emission of HAPs during the glassmaking process. While heavy metals are present in colored glasses, they are locked into the glass matrix and generally cannot interact with the outside world. This "lock" is so effective that inclusion in borosilicate glasses is considered the method of choice for sequestration of high level radioactive wastes, the most toxic of all substances known to man.

Heavy metal colorants in glasses can generally only be emitted as HAPs under certain circumstances:

- 1) when mixed with (non-cullet) raw materials that tend to outgas as part of the glass-forming process, the metals can be carried away with the expressed gasses.
- 2) when used in a batch that is then brought to a full melt using an air/fuel heat source, the metals can be carried away with the exhaust stream.

Mixtures containing only glasses or only glasses and raw colorants that do not out-gas and that are heated in electric furnaces will not produce heavy metal HAPs. These mixtures should not fall within the scope of these rules.

I'm also concerned that unilaterally defining all colored glasses as raw materials in all circumstances creates a circular definition where any combination of glasses that includes a colored glass becomes "a mixture of cullet and raw materials," one of the included definitions of a raw glass batch. Given the overly broad definition of a "glass-making furnace" and that "melt" is not properly defined a sufficiently enthusiastic enforcement could apply these rules to any use of colored glasses and heat sufficient to allow the glass to flow, such as in a fusing kiln or on a glassblowing bench.

Possible solutions are:

- 1) Eliminate circular definition by removing colored glasses as a raw material.

2) Only consider colored glasses to be a raw material when they are mixed with non-cullet raw materials that will out-gas, or brought to a fully liquid state in an air/fuel fired furnace.

Item 4: Suggestions by the advisory committee that the trigger level be lowered to as little as one pound.

I can't honestly see how this will benefit anyone other than the existing manufacturers that are suggesting it. I've discussed above how lowering these trigger levels could inappropriately widen the scope of these rules. If there is a need to regulate other glassworking processes this should be addressed in a separate rulemaking process with its own public discussion, rather than some future expansion of this one.

I will add some salient points:

* None of the existing 5 CAGMs would have been able to start up and thrive if this had been in place when they started. Putting it in place now will just serve to nip this industry in the bud by preventing any new CAGMs from starting up. The glass art was until recently a vital, growing and thriving industry in Oregon. We all fervently hope we can eventually get back to that position. It's also important to note that with the closure of Spectrum Glass in Washington, this industry is almost entirely located in Oregon.

* In my opinion the economic arguments put forward (higher costs will encourage bootleg glassmakers) is moot. These manufacturers' prices are already well past the point of spurring this if it was going to happen. In all honesty, this industry would benefit from some healthy competition to drive prices down.

Further, it's important to remember that these customers are artists and glassblowers. Very few of them have the technical skills and discipline or the desire to go there. Instead, they view this as an unwanted digression from doing what they love. How many bakers really want to grind their own flour?

* It's important to remember that we are dealing with an art form and medium here. There needs to be some reasonable room for creativity and experimentation with new glasses and colors for those that do want to go there. If that can only happen inside the existing manufacturers, the art form won't die, but the creativity probably will.

* Last, on the possibility of expanding this statewide, I'm of two minds. On the one hand, what's sauce for the goose is sauce for the gander. Of all the many artists and glassworkers I've talked with since this controversy began, not one has expressed any desire to have no controls over air quality in place or that this rulemaking is somehow unneeded. None of us want to poison our neighbors. However, we are all very dismayed at the rush to implement and the extreme economic hardship this has caused for many artists and glassworkers. Why were no materials users included on the Advisory Committee?

On the other hand, I can see some real value in creating an incentive for CAGMs to relocate (or start up) outside Oregon's most densely populated area. Currently there are no Oregon-based CAGMs outside the Portland area. Spreading this industry out could have real economic benefits by encouraging growth. Let's not forget that this industry is unique; we are doing things here in Oregon not done anywhere else. It's part of what makes us who we are. And the whole world is better for it.

Thank you for your consideration,

Christopher Mini

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