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**Sent:** Monday, June 01, 2020 11:58 PM  
**To:** Mataway-Novak, Dylan <Mataway-Novak.Dylan@epa.gov>  
**Cc:** TitleVPetitions <TitleVPetitions@epa.gov>  
**Subject:** With entire minutes to spare, a Petition on Bullseye Glass's Title V Permit

To: U.S. Environmental Protection Administration, Title V Petitions

From: Daniel Forbes, Portland, Oregon [ddanforbes@aol.com](mailto:ddanforbes@aol.com)

Re: Bullseye Glass Co., 3722 SE 21st Ave., Portland, Oregon 97202.  
ACDP Permit 26-3135-ST-01

Date: June 1, 2020

Good Folks of the U.S. Environmental Protection Administration:

My name is Daniel Forbes. I'm a resident of Portland, Oregon and should say that [my 20-article series](#) in *The Portland Mercury* on toxic emissions from glass factories, including Bullseye Glass, helped spur statewide regulatory reform in Oregon.

Bullseye Glass has been granted a Title V Operating Permit by the Oregon Department of Environmental Quality (DEQ). One notable feature of the permit, arising from its 2017 Emissions Compliance Test ([see here](#)), is that DEQ eventually granted the company a 358 lb/day chromium usage allowance.

It's worth noting that Bullseye melts chromium in just one of its 18 furnaces, that furnace's capacity is 1550 lb.

It's also worth noting that both Bullseye and DEQ agree that any chromium emitted from its facility is declared to be 98% hexavalent chromium.

I write today to express my concern over what I see as Bullseye's alleged failure to comply with 40 CFR Part 63 Subpart SSSSSS ([see here](#) pg. 424). Section 11.452 states that the facility "must conduct the performance test while the furnace is producing glass that has the greatest potential to emit the glass manufacturing metal HAP from among the glass formulations that are used in any of the identical furnaces."

I contend that Bullseye's 2017 chromium stack emissions test directly violated this provision of federal code. What's more it did so knowingly since an article in *The Portland Mercury* detailed it had pursued the same strategy during a prior, 2016 chrome emissions test it did not submit for consideration. ([See here.](#))

What's more DEQ was fully aware of this. My 2016 article linked above, as well as my public statements at a December 17, 2019 public meeting on Bullseye's pending permit, as well as my

written comments submitted to DEQ in January 2020, all outlined in greater detail than I submit here, how Bullseye used a refractory, hard to melt species of chromium (Cr) rather than the far easier to melt species of Cr that it uses up to 10X the amount to make a different type of glass.

DEQ's proposed daily usage allowance arose from Cr emission tests back in March 2017. On page 75 of Bullseye's Title V Permit Application ([see here](#), pg. 75), the company indicates that it used "Green Chrome Oxide" as the Source Test Raw Material.

And that may well lessen the chrome emission test's validity since numerous digital sources, including the American Chemical Society ([see here](#)), declare "Green Chrome Oxide" to be a synonym for chromium oxide (Cr<sub>2</sub>O<sub>3</sub>; CAS # 1308-38-9). See also the New Jersey-based supplier which has "Green Chrome Oxide" as the Material Name on its safety data sheet ([here](#)). There are numerous other sites referencing Green Chrome Oxide as Cr<sub>2</sub>O<sub>3</sub>, CAS # 1308-38-9.

And here's the potential problem with Bullseye's emission test and DEQ's resulting usage rates: Cr<sub>2</sub>O<sub>3</sub>'s melting point is 2,435-degrees C -- or 4415F.

That matters since the Bullseye chrome-emissions test data indicate that the temperature within Furnace 7, the furnace melting chrome during the 3/26/17 & 3/27/17 source and emission compliance tests averaged just a few degrees below 2500F. (2491F the first day and 2488F the second day, [see here](#), pgs 103 & 110).

Cr<sub>2</sub>O<sub>3</sub> is notoriously hard to melt. Glass chemistry literature refers to Chromium Oxide's noted tendency to not melt fully, leaving unmelted quantities in the batch -- unmelted black batch stones called specs or flecks or stones. They are visible defects in the glass.

The recipe – the batch – can be fluxed to lower Cr<sub>2</sub>O<sub>3</sub>'s melting point. DEQ informs me they are unaware which if any of the ingredients in the test melt may have served as a flux. Unmelted Cr<sub>2</sub>O<sub>3</sub> may remain inert as far as the emissions test is concerned.

For its part, DEQ offered an unclear reply when senior managers were asked whether it had verified that the test used the right flux in the right amount: "Batch tickets do not label any ingredient as flux. If you would like to know what Bullseye uses as flux, that is a question for Bullseye." Does that mean DEQ doesn't know?

Bullseye did not reply to email asking what flux was used, and one of its managers, the company's public face, hung up on me when I reached him by phone. If a proper flux wasn't applied, no way the Cr<sub>2</sub>O<sub>3</sub> was melted and thus available to be emitted.

What's more, the test-melt glass used by Bullseye had only 0.6% to 0.7% Cr<sub>2</sub>O<sub>3</sub> as the Cr in glass melted for the emissions test. This is according to DEQ.

This despite DEQ and the EPA's requirement to test the most Cr-rich glass Bullseye makes. That would be the Aventurines the company sells, glasses featured in its catalog. The Aventurines, according to interviews I've done, as well as recipes encountered on-line, contain 5% to 10% chromium or approximately 10X the amount as the test glass.

The Aventurine glasses are super-saturated with chromium. They are made with either sodium dichromate or potassium dichromate. It would seem to be the former in Bullseye's case. In 2017, the year the emissions test occurred, it had up to 999 lb of sodium dichromate dihydrate stored at its facility according to the Oregon Office of State Fire Marshal. (The water molecules are of no significance.) In 2019, the fire marshal reported it had up to 4,999 lb at its facility.

As to the Aventurine's recipe, a materials handbook published by the trade publication, [Ceramics Industry here](#), called for 10% potassium dichromate in chrome aventurines. A 1902 book, *The Chemistry of Pigments* by Ernest Parry and John Coste, has a aventurine recipe that calls for up to 9% dichromate. ([See here.](#)) This same recipe is also mentioned in an 1883 journal from the California Division of Mines and Geology ([here](#)). And in 1921, the *Journal of the American Ceramics Society* ([see here](#)) cited a "Green aventurine" recipe that called for 5.4% potassium dichromate. (In these texts, search for the term, "aventurine" to find the reference.)

This skewed the stack emissions test in the company's favor resulting in what, on its face, seems a quite large daily chrome-use allowance. And if Bullseye might say that it would never use 358 lb of Cr per day, note, please, that it requested to use 582 lb/day.

Yet Bullseye had acknowledged its intent to make a chrome-rich glass. In a letter to DEQ (see here, page 270) in January 2017 setting up the parameters of the March stack test, the company wrote DEQ that it "proposes to conduct the ... source test as follows:" And, referring to Hazardous Air Pollutants, the second bullet point read, "Glass formulations representing formulations with the greatest potential to emit metal HAPs (have significantly higher quantities of metal HAPs compared to other glass formulations) will be used."

Finally, the DEQ permit-writer overseeing Bullseye's permit application to melt hundreds of pounds of chromium of the company's choosing per day, was unaware that during the March 2017 emissions test, Bullseye had between 200 and 500 pounds of sodium dichromate dihydrate on hand according to Oregon's Office State Fire Marshal.

And once the company received permission in June 2017 to melt chromium again, it soon increased its supply of sodium dichromate to between 500 and 1,000 pounds. Not bought to just sit on the shelf, Bullseye also had between 500 and 1,000 pounds of it in 2018 according to the Fire Marshal.

In reply to specific questions put to DEQ's top managers about the company's use of potassium or sodium dichromate (dihydrate just means just means there's some water molecules tagging along for the ride), DEQ's spokesperson Lauren Wirtis emailed that, "Bullseye does not use potassium or sodium dichromate at their facility."

Asked the provenance of this statement, Wirtis said, "Dave Kauth told me this information. Bullseye does not use, as an input, any hexavalent chromium, including potassium and sodium dichromate." Kauth is the DEQ permit writer.

Wirtis added, "DEQ receives batch [i.e., recipe] tickets that delineate what is being used to make various types of glass."

Maybe so. But Bullseye apparently never submitted batch tickets saying it used any of the up to 1,000 pounds of Sodium Dichromate Dihydrate it had on-hand in both 2017 and 2018, enough to make some 50 tons of glass. In 2019, according to the state fire marshal, the facility had between 1,000 and 4,999 lb of Sodium Dichromate Dihydrate on site.

Given that Bullseye was subject to the only Cease and Desist Order given to a manufacturer in Oregon's history (I don't think there's been one issued to another facility.) Plus, it had to pay \$6.5 million to settle a class action lawsuit brought by its neighbors, one might think DEQ would check with the fire marshal as to the toxic heavy metals and other hazards it had on hand.

Finally, Subpart 6S (63.11452) also states that the facility must, "provide in your Notification of Compliance Status documentation that demonstrates **why** the tested glass formulation has the greatest potential to emit the glass manufacturing metal HAP." [Emphasis added.]

I've searched the Permit Application, the Permit granted by DEQ and – at DEQ's suggestion today – the Bullseye Source Test Report ([here](#)). And I haven't found anything I'd call a demonstration of **WHY** the Cr<sub>2</sub>O<sub>3</sub> recipe that used roughly 10% of the amount of far easier to melt Na<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> meets the law's requirement stated just above.

In fact, the only text that might approximate a Notification of Compliance Status that I could find was on page 11 of the Source Test Report. Under Heading 3.2 TEST CONDITIONS, it stated:

*"The Subpart 6S compliance test was conducted while each non-identical furnace was producing glass with the greatest potential to emit the glass manufacturing metal HAPs.... Test conditions were established by Bullseye Glass Company personnel."*

So, saying it apparently makes it so – if Bullseye staffers say so. But there's no indication of how the glass made with roughly 10% of the chromium used in the Aventurine glass recipes had the "greatest potential" to emit chromium as a HAP.

The recipe used for the emissions test would seem to directly violate this provision of federal code since Bullseye regularly makes and sells Aventurine glasses which use approximately 10x more chromium – and less refractory Cr --than the glass made for the emissions test.