Oregon
Kate Brown, Governor

Department of Environmental Quality
Office of the Director
811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5343
FAX (503) 229-5100
TTY: 711

June 24, 2016

Eric Durrin
Bullseye Glass Co.
3722 SE 21st Avenue
Portland, OR 97202

Re: Addendum No. 1 to MAO
No. AQ/V-NWR-16-088
HAP metal usage allowances

Dear Mr. Durrin:

DEQ has received a request from Bullseye Glass Co. to establish usage allowances for cobalt, manganese, nickel and selenium to allow use of these metals in uncontrolled furnaces in accordance with Paragraph 25 of Mutual Agreement and Order No. AQ/V-NWR-16-088 (MAO). The requested maximum usage allowances are listed here:

REQUESTED MAXIMUM DAILY AND ANNUAL USAGE ALLOWANCES IN UNCONTROLLED FURNACES

Raw Material	Daily raw material allowed (pounds)	12 month raw material allowed (pounds)
Cobalt	8.0	700
Manganese	12.0	550
Nickel	4.0	400
Selenium	3.0	725

As described in Bullseye's letter, the requested allowances are based on the following:

- Bullseye's maximum usage of each of these metals between March 1 and May 18, 2016;
- The maximum 24-hour monitored concentration of those metals from any of the four DEQ monitoring sites around Bullseye on any date between March 1 and May 18, 2016.

The dates of the maximum monitored concentrations may not correspond to the maximum usage dates, but Bullseye stated that the maximum monitored concentrations were used to meet the requirement to propose protective usage allowances.

DEQ and the Oregon Health Authority (OHA) both reviewed the request and consulted to ensure that any approval of usage rates would be protective of human health. To analyze the requested rates, DEQ compared Bullseye's usage rates with the ambient concentrations that have been monitored near Bullseye. DEQ determined that the requested allowances are approvable except for the requested nickel allowances and subject to the conditions set forth below regarding use of selenium. Further, DEQ

determined that 12 month allowances are not appropriate for nickel and manganese because Bullseye may not use nickel or manganese in uncontrolled furnaces on and after September 1. DEQ has instead approved usage allowances up to September 1 for these metals.

As detailed in the attached memo, DEQ has determined that the approved daily and longer-term allowances in the table below will be protective of public health by keeping the actual concentration of each of the metals below the applicable screening levels. By this letter, DEQ approves the maximum daily and longer-term usage allowances listed below as an amendment to the MAO as Addendum No. 1. However, DEQ reserves the right to rescind this approval if monitoring data indicates that concentrations of any of the metals related to Bullseye's production require altering the usage rates as determined by DEQ and OHA.

APPROVED MAXIMUM DAILY AND LONGER-TERM USAGE ALLOWANCES IN UNCONTROLLED FURNACES

Raw Material	Daily raw material allowed (pounds)	12 month raw material allowed (pounds)
Cobalt	8.0	700
Selenium	3.0	725
	Daily raw material allowed (pounds)	Raw material allowed until September 1, 2016 (pounds)
Manganese	12.0	550
Nickel	3.4	205

CONDITION REGARDING USE OF SELENIUM:
Bullseye may not use any selenium in any uncontrolled furnace unless and until it has agreed in writing to comply with the terms of the City of Portland Bureau of Environmental Services Compliance Order No. CO-16-004-34, issued June 10, 2016. Bullseye's continued use of selenium is further conditioned on its continuing compliance with that compliance order.

Sincerely,

Leah K. Feldon

Leah K. Feldon
Office of Compliance and Enforcement
Oregon Department of Environmental Quality

Enclosure: Memorandum

SUBJECT: Memorandum re DEQ Review of Bullseye's metal usage request

TO: Bullseye File, Case No. AQ/V-NWR-16-088

DATE: June 24, 2016

Paragraph 25 of Mutual Agreement and Order No. AQ/V-NWR-16-088 (MAO) states that Bullseye may seek authorization to use specified metals in uncontrolled glass-making furnaces. The request to use the metals must be for daily usage rates that will result in ambient concentrations that are protective of human health. Bullseye submitted a request in the week of June 13-17, 2016, and requested the following usage rates:

Raw Material	Daily Raw Material Allowance (pounds)	12 Month Raw Material Allowance (pounds)
Cobalt	≤8.0	≤700
Manganese	≤12.0	≤550
Nickel	≤4.0	≤400
Selenium	≤3.0	≤725

Bullseye compared their maximum daily usage of the metals in question with the maximum ambient concentration monitored at any of the four ambient monitors located around their facility during the period from March 1, 2016 through May 18, 2016. The highest ambient concentration monitored on any date was used, even if the highest metal usage and highest ambient concentration did not occur on the same date. Although other metals sources may contribute to ambient concentrations, Bullseye's review was based on the assumption that all ambient monitoring levels could be attributed to their emissions.

Review of Request

DEQ considered a requested usage level approvable if DEQ could conclude the following:

- The requested usage level would not result in daily ambient concentrations that would exceed the daily screening concentration (DSC), and
- The requested usage level would not result in average ambient concentrations that would exceed the Ambient Benchmark Concentration (ABC) on a daily basis, although daily concentrations may at times exceed an ABC.

Each metal for which Bullseye has requested a usage allowance is considered below.

Cobalt

DEQ/OHA Daily screening concentration (DSC), ng/m3	DEQ Ambient Benchmark Concentration (ABC), ng/m3	Highest monitored concentration, ng/m3	Highest metal usage, lb
100	100	8.9	4.0

Bullseye requested up to 8.0 lb/day, twice the highest usage during the review period. Assuming this may result in doubling the highest ambient concentration to 18 ng/m3, this is still far below both the DSC and ABC, and DEQ finds the requested daily usage amount approvable.

Manganese

DEQ/OHA Daily screening concentration (DSC), ng/m3	DEQ Ambient Benchmark Concentration (ABC), ng/m3	Highest monitored concentration, ng/m3	Highest metal usage, lb
400	90	46.4	16.5

Bullseye requested up to 12.0 lb/day, or 75 percent of the highest usage during the review period. Since the requested usage rate is less than the maximum usage rate during the review period, DEQ does not expect ambient concentrations to exceed or approach the highest monitored concentration. The highest monitored concentration is roughly half of the ABC and is far below the DSC, and DEQ finds the requested daily usage amount approvable.

Selenium

DEQ/OHA Daily screening concentration (DSC), ng/m3	DEQ Ambient Benchmark Concentration (ABC), ng/m3	Highest monitored concentration, ng/m3	Highest metal usage, lb
710	none	464	17.3

Bullseye requested up to 3.0 lb/day, or about 18 percent of the highest usage during the review period. Since the requested usage rate is less than the maximum usage rate during the review period, DEQ does not expect ambient concentrations to exceed or approach the highest monitored concentration. The highest monitored concentration is roughly 65% of the DSC. DEQ has not established an ABC for selenium. DEQ finds the requested daily usage amount approvable.

Nickel

DEQ/OHA Daily screening concentration (DSC), ng/m3	DEQ Ambient Benchmark Concentration (ABC), ng/m3	Highest monitored concentration, ng/m3	Highest metal usage, lb
200	4.0	16.2	6.15

Bullseye requested up to 4.0 lb/day, or about 65 percent of the highest usage during the review period. Comparing this usage rate to the highest usage rate (6.15 lb) and highest ambient concentration (16.2 ng/m3), it appears there is a possibility that a usage rate of 4 lb/day could result in ambient concentrations over 4.0 ng/m3. DEQ therefore reviewed the ambient monitoring data further to determine if the requested usage level was approvable.

The following information was considered:

	Date range 4/4 - 5/22	Date range 2/9 - 5/22	Date range 4/4 - 5/22 plus Oct. 2015	Date range 2/9 - 5/22 plus Oct. 2015
Average Ni usage, lb/day *	2.61	--	2.44	--
Average ambient concentration, ng/m3 **	1.25	1.97	2.45	2.59

* Averaged over the number of days that Ni was actually used.

** Averaged over the number of days that have usable monitoring results, does not include zeroes or below detection level values.

DEQ included the October 2015 data in the nickel usage rate review because nickel is the only metal of the four metals in this review that exceeded an ABC in October.

A daily average Ni usage of 4.0 lb/day would be an increase of 1.53 times the actual average usage of 2.61 lb/day (i.e. 4/2.61) for the date range 4/4 to 5/22.

A daily average Ni usage of 4.0 lb/day would be an increase of 1.64 times the actual average usage of 2.44 lb/day (i.e. 4/2.44) for the date range 4/4 to 5/22 plus October, 2015.

For this review, DEQ has used the higher of these usage increase ratios (1.64) because this gives a more protective result.

Assuming that the average ambient concentrations in the table above would increase by the same ratio as the usage increase ratio of 1.64, the results would be:

Date range 4/4 – 5/22: 1.64*1.25 = 2.05 ng/m3;

Date range 2/9 - 5/22: 1.64*1.97 = 3.23 ng/m3;

Date range 4/4 – 5/22 plus October 2015: 1.64*2.45 = 4.02 ng/m3; and

Date range 2/9 – 5/22 plus October 2015: 1.64*2.59 = 4.25 ng/m3.

The highest estimate of 4.25 ng/m3 does not meet DEQ's criteria that the expected average ambient concentrations would not exceed the ABC. To determine an approvable daily usage rate for nickel, DEQ calculated the daily maximum usage rate that would just equal the nickel ABC, and then calculated 90 percent of that value to provide additional margin.

Calculate the usage increase ratio 'r' that would give 4.0 ng/m3 using the last equation above and substituting the appropriate values:

r*2.59 = 4.0, from which r = 1.54.

Using r= 1.54 and the lowest usage rate of 2.44 lb/day, calculate the upper usage rate 'x':

1.54 = x/2.44, or x = 1.54*2.44, from which the usage rate x = 3.76 lb/day.

Taking 90 percent of 3.76 gives 3.4 lb/day as the approvable daily nickel usage rate.

Check: usage increase ratio = 3.4/2.44 = 1.39; estimated average ambient concentration = 1.39*2.59 = 3.6 ng/m3, which meets DEQ's criteria that the expected average ambient concentration would not exceed the ABC of 4.0 ng/m3.

Longer-term usage limits

Bullseye also proposed 12 month material usage allowances for all 4 metals. The proposed allowances were based on fewer than 365 days per year at the maximum daily usage rate. However, Bullseye may not use manganese and nickel in uncontrolled furnaces after September 1, 2016, so DEQ does not consider 12 month usage limits appropriate for these two metals. After September 1, cobalt and selenium may still be used in uncontrolled furnaces, so 12 month usage allowances for these two metals are appropriate.

Cobalt and selenium

Requested usage allowances:

Raw Material	Daily Raw Material Allowance (pounds)	12 Month Raw Material Allowance (pounds)	Calculated number of days of usage
Cobalt	≤8.0	≤700	700/8 = 87.5
Selenium	≤3.0	≤725	725/3 = 241.6

Both of the proposed 12 month allowances will ensure that cobalt and selenium will not be used every day of the year at the maximum daily usage rate, and DEQ finds the requested 12 month usage amounts for cobalt and selenium approvable.

Manganese and Nickel

Requested usage allowances:

Raw Material	Daily Raw Material Allowance (pounds)	12 Month Raw Material Allowance (pounds)
Manganese	≤12.0	≤550
Nickel	≤4.0 *	≤400

* 4.0 was the requested allowance; as noted above, the approved allowance is 3.4.

Manganese and nickel may only be used in uncontrolled furnaces until September 1. Assuming the use of metals is approved to begin on June 26, there are 67 calendar days available for production until September 1. The last column in the table below shows the hypothetical usage if the Daily Allowance of manganese and nickel were used each day for 67 days. Each result is discussed in more detail after the table.

Raw Material	Daily Raw Material Allowance (pounds)	12 Month Raw Material Allowance (pounds)	Hypothetical usage if the Daily Allowance were used every day for 67 days (pounds)
Manganese	≤12.0	≤550	67*12.0 = 804
Nickel	≤3.4	≤400	67*3.4 = 228

Manganese

If Bullseye used the maximum approved daily usage rates on 67 days, the total usage of manganese would be 804 pounds (67*12). Bullseye proposed a 12 month usage allowance of 550 lb for manganese, which is less than the hypothetical amount that could be used up to September 1. DEQ finds the requested 12 month usage amount for manganese approvable. However, since manganese may not be used in uncontrolled furnaces on and after September 1, DEQ has specified that no more than 550 pounds of manganese may be used until September 1.

Nickel

At the maximum approved daily usage rates on 67 days, the total usage of nickel would 228 pounds (67*3.4). Bullseye proposed a 12 month usage allowance of 400 lb for nickel, which is more than the possible maximum usage up to September 1, and Bullseye could hypothetically use the maximum daily amount of nickel each day for 67 days without exceeding the suggested allowance of 400 pounds. In this case, DEQ has determined that a different usage allowance is more appropriate and approves a usage allowance that is 90 percent of the maximum 228 pounds that could be used up to September 1. This gives a usage allowance of 205 pounds until September 1, 2016.