



PUBLIC HEALTH DIVISION  
Center for Health Protection

Kate Brown, Governor

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Joe Westersund  
811 SW Sixth Avenue

July 29, 2016

Dear Mr. Westersund,

The Oregon Health Authority (OHA) has partnered with DEQ throughout the rule-writing process and is supportive of the approach that DEQ is taking with art glass manufacturers. As DEQ knows, OHA has initiated a process to review and revise the 24-hour screening levels for multiple air toxics, including hexavalent chromium, with more scientific, external peer review and opportunity for public input. As DEQ used the existing 24-hour screening level for hexavalent chromium as the daily acceptable source impact level in the art glass manufacturing rule, this revision process may be relevant to this rule.

Unfortunately, OHA will not be able to complete this 24-hour screening level review process before DEQ proposes new art glass rules to the Environmental Quality Commission. However, hexavalent chromium is one of the metals that OHA is particularly concerned about in terms of the existing 24-hour screening level. In order to ensure that the daily acceptable source impact level in the permanent rule is protective of health, OHA recommends that sections 2, 3(b)(C)(ii), and 4 of rule 340-244-9040 be modified such that the daily acceptable source impact level is revised from 36 nanograms per cubic meter ( $\text{ng}/\text{m}^3$ ) to  $5 \text{ ng}/\text{m}^3$ . This value of  $5 \text{ ng}/\text{m}^3$  is the intermediate minimal risk level (MRL) established by the Agency for Toxic Substances and Disease Registry (ATSDR) (<http://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=62&tid=17>).

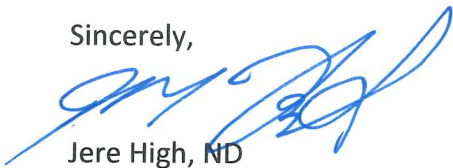
Intermediate MRLs are designed for exposures that are longer than two weeks, but less than one year. This intermediate MRL is based on a study in which workers were occupationally exposed to hexavalent chromium in the form of chromic acid aerosol mists. At concentrations 400 times higher ( $2,000 \text{ ng}/\text{m}^3$ ) than the proposed  $5 \text{ ng}/\text{m}^3$ , observed health effects included nasal irritation, mucosal atrophy, and decreased measures of lung function. While the shortest duration exposures included in the study were 0.1 years (~36 days), it was not clear in the study whether the health effects observed began when the workers first started working there or whether it took the full 36 days for the health effects to occur. Therefore, applying a 24-hour averaging time to this intermediate MRL is reasonable and health protective. The short-term toxicity of chromic acid aerosol mists is much greater than the short-term toxicity of other forms of hexavalent chromium, such as sodium dichromate particulates. ATSDR's intermediate MRL for sodium dichromate is  $300 \text{ ng}/\text{m}^3$ . Because there is uncertainty about which form of hexavalent chromium is present in ambient air surrounding art glass manufacturing facilities, OHA is recommending the MRL for the more toxic form out of an abundance of caution. This

effectively assumes that 100% of the hexavalent chromium contributed to ambient air by art glass manufacturers is in the form of the more toxic chromic acid aerosol mist.

Because of these layers of conservatism/health protectiveness, a 24-hour ambient monitoring sample result higher than 5 ng/m<sup>3</sup> of hexavalent chromium should not automatically be construed to mean that acute or immediate health effects are imminent or expected. ATSDR's stated use of this number is for exposures that last longer than two weeks, but less than one year.

As OHA's process to review and revise 24-hour screening levels for multiple contaminants, including hexavalent chromium, progresses, it may be possible that a different 24-hour screening level for hexavalent chromium will be published. It is very unlikely that the final value would be any less than the 5 ng/m<sup>3</sup> recommended here for the purposes of this rule.

Sincerely,



Jere High, ND  
Administrator, Center for Health Protection  
Public Health Division