Appendix T Discussion of Conservative Lifetime Exposure Health Based Concentration of Hexavalent Chromium

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MDE's conservative lifetime exposure health based concentration 0.3 micrograms per liter (μg/L) of hexavalent chromium drinking water is a calculated value based upon a cancer risk of 1 in 100,000 ($1x10^{-5}$ (1E-05)) for carcinogens and a Hazard Index of 1 for noncarcinogens as the point at which actions may be warranted. Using these points of departure as the guiding principle in establishing an action level in an environmental media, and recognizing the cancer health based concentration is lower than the noncancer concentration, MDE calculates the cancer risk threshold at 1E-05, based on the EPA Regional Screening Level (RSL) published tables (Reference 5) for carcinogens, as referenced on page 7 of the MDE's Cleanup Standards for Soil and Groundwater guidance document (Reference 1). MDE uses the same cancer risk threshold of 1E-05, where applicable in the Air and Radiation Management Administration (COMAR 26.11.16.03) and in the Water Management Administration (COMAR 26.08.02.03-2).

The conservative lifetime exposure health based concentration of 0.3 μg/L for hexavalent chromium in drinking water was derived from the 2012 EPA Regional Screening Level (RSL) table toxicity value for hexavalent chromium in drinking water and was calculated assuming a lifetime exposure to hexavalent chromium. The derived value is described as a conservative concentration, because the numbers provided in the EPA's RSL tables have factored in underlying assumptions that include safety factors derived to overestimate the final calculated risks (exposure duration, exposure frequency, ingestion rates, toxicity values). When a number of conservative assumptions are combined in an exposure model, the resulting calculations can propagate these conservative assumptions, leading to an overestimation of potential risk. Both the results of the risk assessment and the uncertainties associated with the risk estimates must be considered when making risk management decisions. In the derivation of a final cleanup value at any location, if such action is warranted, additional factors such as the presence of naturally occurring metals, other contributing sources, local hydrology and technical practicability must be considered.