



Figure 5. Hexavalent chromium concentrations in 16 samples of groundwater, commercial spring water and tap water origins, where concentrations below the detection limits are shown by 'BD'.

Conclusion

In this study we presented a method for the ultra-low detection and characterization of hexavalent chromium in potable waters in less than eight minutes with excellent accuracy. The inert and metal-free fluid path of the NexSAR Inert HPLC, coupled with the NexION ICP-MS' Universal Cell Technology™, which controls reactions and can rapidly eject interfering ions and reaction byproducts from the cell, were able to ensure that a calculated LOD of 3.8 ppt could be

attained. This allowed a limit of quantification as low as 12.5 ppt and provided confidence that concentrations around the PHG of California could be easily assessed. As demonstrated, hexavalent chromium could be observed in all samples except for groundwater, which had come from a pristine location, and the Cr VI in these samples was below the method detection limit.

Consumables Used

Component	Description	Part Number
HPLC Vials	HPLC tested plastic vials, 1.5 mL PP	N9301736
PEEK Tubing	Yellow, 0.007" ID, 1/16" OD (5 feet)	N9302678
PEEK Fittings	Fingertight for 1/16" OD PEEK tubing	09920513
200 µL Loop	200 µL PEEK sample loop	N8152913
PEEK Guard Column	Anion exchange guard column	N8122254

References

- https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Chromium6.html
- Mitrakas M, Tzoupanos ND, Kazakiso N, Kaprara E, Simeonidis K, Samarasoo P, Zouboulis AI. 2012. Hexavalent chromium [Cr(VI)] in drinking water of Greece – estimation of the origin. Crete Conference Proceedings
- Liquid Chromatography Problem Solving and Troubleshooting. 1994. Journal of Chromatographic Science 32:524 <https://doi.org/10.1093/chromsci/32.11.524>
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