

Explanation of Spreadsheet and Chart Comparing 500 mrem/yr DRL Concentrations to MCL

There is an Excel Spreadsheet and Stacked Column Chart provided.

1. In general they are sorted by Radionuclide, in the order provided in the OW table for the 4 mrem/yr MCL concentrations with concentrations added for some of the gross alpha 15 pCi/l MCL, the 5 pCi/l Radium 226 and 228 MCL, and the some of the uranium isotopes converted to the 30 microgram per liter total uranium MCL
2. If no PAG DRL was provided in 2007 and 2015/2016 draft PAGs, the radionuclide is not included in the Chart (zero values will not work in a logarithmic Excel chart)
3. Y-90 was deleted from the Chart since it was the only DRL to decrease from 2007 to 2015/2016 (negative values will not work in a logarithmic Excel chart)
4. Since 3 of the 5 radionuclides listed in both the 2007 and 2015/2016 PAGs had a 22% increase in DRL concentrations (of the other two, one had a decrease and the other a 12% increase), an increase of 22% was assumed for the other 2007 radionuclides in the Chart to represent 2015/2016 concentrations (it is likely this is the result of reducing the water ingestion rates from 2 liters to 1.643 liters per day)

Rationale for Comparison to MCL:

The CERCLA policy most analogous to the drinking water PAG would be the “Regional Removal Management Levels (RMLs)” User Guide which discusses when short-term risks from chemically contaminated drinking water wells are high enough to warrant providing alternative (replacement) drinking water supplies. Although exceeding an MCL does not trigger a removal action, once the Agency has determined the need for a removal action under CERCLA, typically MCLs should be attained to the extent practicable during the removal action considering the exigencies of the situation.

Following are explanations of the information in the spreadsheet and chart.

DRLs info Source:

- 2007 PAG DRLs are provided in Table 4.1 of August 2007 internal review draft of Protective Action Guidance for Radiological Incidents. The DRLs without radioactive decay listed in 2007 that were most similar to those provided during the 2015 review and in the 2016 version of the PAGs
- 2015 PAG DRLs provided in spreadsheet attached to June 29, 2015 email from Samuel Hernandez-Quinones to Michael Scozzafava and Sara DeCair.

MCLs info Source:

- MCLs from OW webpage for 4 mrem/yr MCL, and OSWER directive “Use of Uranium Drinking Water Standards under 40 CFR 141 and 40 CFR 192 as Remediation Goals for Groundwater at CERCLA sites” which includes a list of radionuclides covered by 15 pCi/l gross alpha MCL (list provided by OW).

- Uranium MCLs are in terms of mass (micrograms per liter), not activity (picoCuries per liter). The 30 micrograms per liter MCL for the uranium element was converted to an activity for each isotope

Comparison of DRL to MCL

- Shows by a factor of #, how much DRL is greater than MCL concentration. The values in the bullets below are represented on the stacked column chart by horizontal lines

- What this means
 - if value is 70, then **1 year** of drinking 2 liters of water at DRL value will equal amount of exposure of drinking water at the MCL level for a lifetime (70 years)
 - if value is 840, then **1 month** of drinking 2 liters of water at DRL value will equal amount of exposure of drinking water at the MCL level for a lifetime (70 years)
 - if value is 3,650 then **1 week** of drinking 2 liters of water at DRL value will equal amount of exposure of drinking water at the MCL level for a lifetime (70 years)
 - if value is 25,550, then **1 day** of drinking 2 liters of water at DRL value will equal amount of exposure of drinking water at the MCL level for a lifetime (70 years)
 - For example, drinking less than one day at the daily rate of 2 liters of Ca-45 at the DRL concentration would result in an exposure that corresponds to drinking liters of water per day for 70 years at the MCL level.