

Procedure for Reviewing Maximum Contaminant Levels (MCLs) for Possible Revision

Last Update: August 1, 1999

Objectives: Pursuant to Health and Safety Code §116365(g), DHS is to conduct a comprehensive review of all factors related to a possible revision of an MCL, including changes in technology or treatment techniques that permit a materially greater protection of public health or attainment of the public health goal (PHG), and any new scientific evidence that indicates that the substance may present a materially different risk to public health than was previously determined.

Criteria for selection of MCLs for comprehensive review:

Subsequent to the establishment of a PHG, the following criteria will be used to determine whether or not to select the MCL for comprehensive review.

1. Is the PHG lower than the state MCL?
2. Have there been any changes in the risk assessment since the existing MCL was promulgated, pursuant to criteria above?
3. Have there been any changes in technology making contaminant removal more feasible and/or less expensive, pursuant to criteria above?
4. If contaminant is a carcinogen, was existing MCL set at a level associated with greater than a *de minimis* (one excess case of cancer in a million people exposed for a 70-year lifetime) risk?
5. Are there any significant trends in contamination levels indicated by recent occurrence data?

Procedure for comprehensive review:

The comprehensive review includes a cost benefit analysis that, to the extent possible, reflects the incremental costs and benefits that would be accrued if the MCL were to be revised to a more stringent level between the existing MCL and down to and including the PHG. The review also includes an evaluation of the feasibility of quantification at any levels that fall below the current reporting level. The steps are as follows:

1. Obtain drinking water source and system data to use in developing benefits and costs:
 - a. All available detection data on occurrence in drinking water in California for past 4 years from WQM (Division of Drinking Water and Environmental Management [DDWEM] compliance monitoring database) and local primacy

agencies (LPAs); data should be chronological by drinking water source, within system, within county, whenever possible.

- b. For each drinking water source—type, volume of water supplied, and the population served for each of the last four years (if available); if not available, then for each system—type and number of sources, proportion of water supplied by groundwater vs surface water, total volume of water supplied for each of past four years, and population served. (If volume of water supplied is not available, estimate using population and 150 gallons/day/person.)
2. Establish a number of possible MCL levels (review points) ranging from the PHG up to the MCL, for purposes of developing an adequate cost-benefit curve.
3. Evaluate the feasibility of quantification at any review points that fall below the current reporting level (DLR).
 - a. Discuss available methods and method detection levels with Sanitation and Radiation Laboratory (SRL); contact members of Reporting Levels Workgroup (RLW) for input on feasibility of quantification at levels below DLR.
 - b. Eliminate from further consideration any review points that SRL and RLW agree are definitely not quantifiable within + 20%; do not eliminate those that are borderline.
4. Develop a matrix of the contaminated drinking water sources, including highest contamination data point, the number of people served, and the estimated water flow in gallons per minute; order from lowest to highest contamination data point for easy division into ranges. A range consists of any level above the lower review point up through the next highest point; e.g., if the review points were 1, 2, and 3, then the ranges would be 1.1 up through 2.5, and 2.6 up through 3.4. (in conformance with Department policy on significant figures which requires rounding to the nearest significant figure and that the number 5 be rounded to the nearest even number).
5. Benefit determination, i.e., theoretical adverse health effects avoided. Note that this determination assumes that adverse health effects occur immediately on exceeding an MCL; this would never actually be the case, because the MCLs are always set with a significant margin of safety to ensure against that; but for purposes of this type of analysis, the MCL is used as the cutoff for immediate risk of adverse effect.
 - a. For carcinogens, determine the number of excess theoretical cancer cases avoided as a function of theoretical cancer risk, contaminant concentration, and population exposed at concentrations just above the review point up through the current MCL.

- b. For noncarcinogens, determine the number of people exposed to the contaminant at concentrations just above the review point up through the current MCL; this number is an estimate of the number of people that would no longer be exposed to the risk of the adverse health affect.
6. Cost determination for removal treatment and additional monitoring incurred
- a. Determine BAT to use in review
 - (1) Determine whether any new technologies for removal are available that could qualify as Best Available Technology (BAT) for review points (pursuant to Section 116370, H&S Code, requires proof of effectiveness under full-scale field applications for removing the contaminant to below the MCL, i.e., the review points in this case).
 - (2) Determine technical feasibility of using existing BAT to remove the contaminant to the level of each of the review points.
 - (3) Determine most cost effective treatment for use in estimating treatment costs (existing BAT or newly qualified BAT; a combination might also be most cost effective, e.g., one more cost effective in the lower concentration range, the other in a higher range).
 - (4) Develop/obtain cost curves to use in treatment cost estimate
 - b. Calculate incremental treatment costs
 - (1) For each source with contamination above a review point but not above the existing MCL, calculate treatment costs based on estimated source flow and contamination.
 - (2) For each review point, sum the number of sources being treated and the treatment costs to determine total incremental costs for each point; also sum incremental costs for each system and the number of systems needing treatment.
 - c. Calculate incremental monitoring costs
 - (1) If a determination was made that quantification is feasible below the current DLR to accommodate a review point below that level, to the extent possible, estimate the number of sources that would be required to do followup quarterly monitoring if the reporting level were lowered, and determine the cost per source/year, as well as the number of systems

involved and the costs per system/year. Sum costs for all sources/systems that would be impacted for each review point.

(2) For a source with contamination above a review point but not above the existing MCL, calculate the cost of an MCL compliance determination (confirmation sample(s) + 5 additional samples within 6 months). Determine the number of sources/systems that would be required to do compliance determinations for each review point and sum the costs.

Evaluation of comprehensive review

Plot benefits versus costs for each review point.

Consider the ratio of benefits to costs at each of the review points.