64536.2 Enhanced Coagulation and Enhanced Softening Performance Requirements

(a)

Systems using approved surface water and conventional filtration treatment (as defined in section 64651.23) shall operate with enhanced coagulation or enhanced softening to achieve the TOC percent removal levels specified in this section, unless the system meets at least one of the alternative compliance criteria listed in section 64536(a) or (b).

(b)

Systems shall achieve the Step 1 percent reduction of TOC specified in table 64536.2-A between the source water and the combined filter effluent, unless the State Board approves a system's request for alternate minimum TOC removal (Step 2) requirements under subsection (c). Systems practicing softening shall meet the Step 1 TOC removals in the far-right column (Source water alkalinity >120 mg/L) of table 64536.2-A for the specified source water TOC: Table 64536.2-A Step 1 Required Removal of TOC by Enhanced Coagulation and Enhanced Softening Systems Using Conventional Treatment1, 2 Required Removal of TOC Source-WaterSource-Water Alkalinity, mg/L as CaCO3 TOC,mg/L0-60 >60-120 >120 >2.0-4.035.0%25.0%15.0% >4.0-8.045.0%35.0%25.0% >8.050.0%40.0%30.0% 1 Systems that meet one of the criteria in section 64536(a), paragraphs (1) through (6) do not have to

operate with enhanced coagulation. 2 Softening systems that meet one of the criteria in section 64536(b), paragraphs (1) through (2) do not have to operate with enhanced softening.

(c)

Systems using approved surface water and conventional treatment that cannot achieve the Step 1 TOC removals required by subsection (b) due to water quality parameters or operational constraints shall apply to the State Board, within three months of failure to achieve the TOC removals required by subsection (b), for approval of Step 2 removal requirements. If the State Board approves the Step 2 removal requirements pursuant to subsection (d), and the system conducted monthly TOC monitoring beginning one year prior to the compliance date specified in section 64530, the Step 2 removal requirements will be retroactive to the compliance date for the purposes of determining compliance.

(d)

Applications made to the State Board by systems using enhanced coagulation for approval of Step 2 removal requirements under subsection (c) shall include, as a minimum, results of bench-scale or pilot-scale testing conducted under paragraph (1) of this subsection that were used to determine the alternate enhanced coagulation level. (1) Alternate enhanced coagulation level is defined as coagulation at a coagulant dose and pH as determined by the method described in paragraphs (1) through (4) such that an incremental addition of 10 mg/L of alum (or equivalent addition of iron coagulant) results in a TOC removal of <0.3 mg/L. The percent removal of TOC at this point on the "TOC removal versus coagulant dose" curve is then defined as the Step 2 removal requirement for the system. Once approved by the State Board, this Step 2 removal requirement supersedes the minimum TOC removal required by section 64536.2(b). This

requirement shall be effective until such time as the State Board approves a new value based on the results of a new bench-scale or pilot-scale test. (2) Bench-scale or pilot-scale testing of enhanced coagulation shall be conducted by using representative water samples and adding 10 mg/L increments of alum (or equivalent addition of iron coagulant) until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in table 64536.2-B. Table 64536.2-B Enhanced Coagulation Step 2 Target pH Alkalinity mg/L as CaCO3Target pH 0-60 5.5 >60-120 6.3 >120-240 7.0 >240 7.5 (3) For waters with alkalinities of less than 60 mg/L for which the addition of small amounts of alum (or equivalent addition of iron coagulant) drives the pH below 5.5 before significant TOC removal occurs, the system shall add necessary chemicals to maintain the pH between 5.3 and 5.7 in samples until the TOC removal of 0.3 mg/L per 10 mg/L alum added (or equivalent addition of iron coagulant) is reached. (4) If the TOC removal is consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose at all dosages of alum (or equivalent addition of iron coagulant), the system is eligible to apply for a waiver of enhanced coagulation requirements. The application shall include, as a minimum, the results of bench-scale or pilot-scale testing conducted under paragraph (1) of this subsection.

(1)

Alternate enhanced coagulation level is defined as coagulation at a coagulant dose and pH as determined by the method described in paragraphs (1) through (4) such that an incremental addition of 10 mg/L of alum (or equivalent addition of iron coagulant) results in a TOC removal of <0.3 mg/L. The percent removal of TOC at this point on the "TOC removal versus coagulant dose" curve is then defined as the Step 2 removal requirement for the system. Once approved by the State Board, this Step 2 removal

requirement supersedes the minimum TOC removal required by section 64536.2(b). This requirement shall be effective until such time as the State Board approves a new value based on the results of a new bench-scale or pilot-scale test.

(2)

Bench-scale or pilot-scale testing of enhanced coagulation shall be conducted by using representative water samples and adding 10 mg/L increments of alum (or equivalent addition of iron coagulant) until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in table 64536.2-B. Table 64536.2-B Enhanced Coagulation Step 2 Target pH Alkalinity mg/L as CaCO3Target pH 0-605.5 >60-1206.3 >120-2407.0 >2407.5

(3)

For waters with alkalinities of less than 60 mg/L for which the addition of small amounts of alum (or equivalent addition of iron coagulant) drives the pH below 5.5 before significant TOC removal occurs, the system shall add necessary chemicals to maintain the pH between 5.3 and 5.7 in samples until the TOC removal of 0.3 mg/L per 10 mg/L alum added (or equivalent addition of iron coagulant) is reached.

(4)

If the TOC removal is consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose at all dosages of alum (or equivalent addition of iron coagulant), the system is eligible to apply for a waiver of enhanced coagulation requirements. The application shall include, as a minimum, the results of bench-scale or pilot-scale testing conducted under paragraph (1) of this subsection.