

0.5 log (factor of 3.2) margin with a high degree of accuracy. However, the closer a system's true mean concentration is to a bin boundary, the greater the likelihood that the system will be misclassified into the wrong bin due to limitations in sampling and analysis. Accordingly, by establishing bins that cover a wide concentration range, the likelihood of system misclassification is reduced.

However, a converse factor relates to equitable protection from risk. Because identical treatment requirements will apply to all systems in the same bin, systems at the higher concentration end of a bin will achieve less risk reduction relative to their source water pathogen levels than systems at the lower concentration end of a bin. Thus, bins with a narrow concentration range provide a more uniform level of public health protection.

In balancing these factors and to account for the wide range of possible source water concentrations among different systems as indicated by Information Collection Rule and ICRSS data, the Advisory Committee recommended and EPA is proposing a second bin threshold at a mean level of 1.0 oocysts/L and a third bin threshold at a mean level of 3.0 oocysts/L. Information Collection Rule and ICRSS data indicate that few, if any, systems would measure mean *Cryptosporidium* concentrations greater than 3.0 oocysts/L, so there was not a need to establish a bin threshold above this value. Thus, the LT2ESWTR proposal includes the following four bins for classifying filtered systems: Bin 1: <0.075/L; Bin 2: ≥0.075 to <1.0/L; Bin 3: ≥1.0/L to <3.0/L; and Bin 4: ≥3.0/L (oocysts/L).

With respect to additional *Cryptosporidium* treatment for systems in Bins 2–4, values were considered ranging from 0.5 to 2.5 log and greater. As recommended by the Advisory Committee, EPA is proposing 1.0 log additional treatment for conventional plants in Bin 2. This level of treatment will ensure that systems classified in Bin 2 will achieve treated water *Cryptosporidium* levels comparable to systems in Bin 1, the lowest risk bin. In contrast, if systems in Bin 2 provided only 0.5 log additional treatment then those systems with mean source water concentrations in the upper part of Bin 2 would have higher levels of *Cryptosporidium* in their finished water than systems in Bin 1.

In consideration of the much greater potential vulnerability of systems in the highest risk bins, the Advisory Committee recommended additional treatment requirements of 2.0 log and 2.5 log for conventional plants in Bins

3 and 4, respectively. The Agency concurs with these recommendations and has incorporated them in today's proposal.

An important aspect of the proposed additional treatment requirements is that they are based, in part, on the current level of treatment provided by filtration plants. As noted earlier, the Advisory Committee assumed when developing its recommendations that conventional treatment plants in compliance with the IESWTR achieve an average of 3 log removal of *Cryptosporidium*. EPA has determined that available data, discussed in section III.D, support this assumption and has proposed a 3 log *Cryptosporidium* treatment credit for conventional plants under the LT2ESWTR. Thus, the additional treatment requirements for conventional plants in Bins 2, 3, and 4 translate to total requirements of 4.0, 5.0, and 5.5 log, respectively.

The Advisory Committee did not address additional treatment requirements for plants with treatment trains other than conventional, but recommended that EPA address such plants in the proposed LT2ESWTR and take comment. Based on treatment studies summarized in section III.D, EPA has concluded that plants with slow sand or DE filtration are able to achieve 3 log or greater removal of *Cryptosporidium* when in compliance with the IESWTR or LT1ESWTR. Because these plants can achieve comparable levels of performance to conventional treatment plants, EPA is proposing that slow sand and DE filtration plants also apply 1 to 2.5 log of additional treatment when classified in Bins 2–4.

Direct filtration differs from conventional treatment in that it does not include sedimentation or an equivalent clarification process prior to filtration. As described in section III.D, EPA has concluded that a sedimentation process can consistently achieve 0.5 log or greater removal of *Cryptosporidium*. The Agency is proposing that direct filtration plants in compliance with the IESWTR or LT1ESWTR receive a 2.5 log *Cryptosporidium* removal credit towards LT2ESWTR requirements. Accordingly, proposed additional treatment requirements for direct filtration plants in bins 2, 3, and 4 are 1.5 log, 2.5 log, and 3 log, respectively.

Section IV.C of this notice describes proposed criteria for determining *Cryptosporidium* treatment credits for other filtration technologies like membranes, bag filters, and cartridge filters. Due to the proprietary and product specific nature of these filtration devices, EPA is not able to

propose a generally applicable credit for them. Rather, the criteria in section IV.C focus on challenge testing to establish treatment credit. Systems using these technologies that are classified in Bins 2–4 must work with their States to assess appropriate credit for their existing treatment trains. This will determine the level of additional treatment necessary to achieve the total treatment requirements for their assigned bins. EPA has developed guidance on challenge testing of bag and cartridge filters and membranes, which is available in draft form in the docket (<http://www.epa.gov/edocket/>).

In order to give systems flexibility in choosing strategies to meet additional *Cryptosporidium* treatment requirements, the Advisory Committee identified a number of management and treatment options, collectively called the microbial toolbox. The toolbox, which is described in section IV.C, contains components relating to watershed control, intake management, pretreatment, additional filtration processes, inactivation, and demonstrations of enhanced performance.

As recommended by the Advisory Committee, EPA is proposing that systems in Bin 2 can meet additional *Cryptosporidium* treatment requirements under the LT2ESWTR using any component or combination of components from the microbial toolbox. However, systems in Bins 3 and 4 must achieve at least 1 log of the additional treatment requirement using inactivation (UV, ozone, chlorine dioxide), membranes, bag filters, cartridge filters, or bank filtration. These specific control measures are proposed due to their ability to serve as significant additional treatment barriers for systems with high levels of pathogens.

*c. Basis for source water monitoring requirements.* The goal of monitoring under the LT2ESWTR is to correctly classify filtration plants into the four LT2ESWTR risk bins. The proposed sampling frequency, time frame, and averaging procedure for bin classification are intended to ensure that systems are accurately assigned to appropriate risk bins while limiting the burden of monitoring costs. The basis for the proposed monitoring requirements for large and small systems is presented in the following discussion.

i. Systems serving at least 10,000 people.

#### Sample Number and Frequency

Systems serving at least 10,000 people have two options for sampling under the