

TABLE VI-1.—SUMMARY OF REGULATORY ALTERNATIVES FOR FILTERED SYSTEMS

Average source water <i>Cryptosporidium</i> monitoring result (oocysts/L)	Additional treatment requirements ¹
Alternative A1 2.0 log inactivation required for all systems	
Alternative A2	
< 0.03	No action.
≥ 0.03 and < 0.1	0.5 log.
≥ 0.1 and < 1.0	1.5 log.
≥ 1.0	2.5 log.
Alternative A3—Preferred Alternative	
< 0.075	No action.
≥ 0.075 and < 1.0	1 log.
≥ 1.0 and < 3.0	2 log.
≥ 3.0	2.5 log.
Alternative A4	
< 0.1	No action.
≥ 0.1 and < 1.0	0.5-log.
≥ 1.0	1.0 log.

¹ Note: "Additional treatment requirements" are in addition to levels already required under existing rules (e.g., the IESWTR and LT1ESWTR).

B. What Analyses Support Selecting the Proposed Rule Option?

EPA has quantified benefits and costs of each of the regulatory alternatives in Table VI-1, as well as for the proposed requirements for unfiltered systems. Quantified benefits stem from estimated reductions in the incidence of cryptosporidiosis resulting from the regulation. To make these estimates, the Agency developed a two-dimensional Monte Carlo model that accounts for uncertainty and variability in key parameters like *Cryptosporidium* occurrence, infectivity, and treatment efficiency. Analyses involved estimating the baseline (pre-LT2ESWTR) risk from *Cryptosporidium* in drinking water, and then projecting the reductions in exposure and risk resulting from the additional treatment requirements of the LT2ESWTR. Costs result largely from the installation of additional treatment, with lesser costs due to monitoring and other implementation activities. Results of these analyses are summarized in the following subsections, and details are shown in the LT2ESWTR EA (USEPA 2003a).

Cryptosporidium occurrence significantly influences the estimated benefits and costs of regulatory alternatives. As discussed in section III.C, EPA analyzed data collected under the Information Collection Rule, the Information Collection Rule Supplemental Surveys of medium systems (ICRSSM), and the Information Collection Rule Supplemental Surveys of large systems (ICRSSL) to estimate the national occurrence distribution of

Cryptosporidium in surface water. EPA evaluated these distributions independently when assessing benefits and costs for different regulatory alternatives. In most cases, results from the ICRSSM data set are within the range of results of the Information Collection Rule and ICRSSL data sets.

EPA selected a Preferred Regulatory Alternative for the LT2ESWTR, consistent with the recommendations of the Advisory Committee. As described next, this selection was based on the estimated impacts and feasibility of the alternatives shown in Table VI-1.

Alternative A1 (across-the-board 2-log inactivation) was not selected because it was the highest cost option and imposed costs but provided few benefits to systems with high quality source water (i.e., relatively low *Cryptosporidium* risk). In addition, there were concerns about the feasibility of requiring almost every surface water treatment plant to install additional treatment processes (e.g., UV or ozone) for *Cryptosporidium*.

Alternatives A2–A4 were evaluated based on several factors, including predictions of costs and benefits, performance of analytical methods for classifying systems in the risk bins, and other specific impacts (e.g., impacts on small systems or sensitive subpopulations). Alternative A3 was recommended by the Advisory Committee because it provides significant health benefits in terms of avoided illnesses and deaths for an acceptable cost. In addition, the Agency believes this alternative is feasible with

available analytical methods and treatment technologies.

Incremental costs and benefits of regulatory alternatives for the LT2ESWTR are shown in section VI.F, and the LT2ESWTR EA contains more detailed information about the benefits and costs of each regulatory option (USEPA 2003a).

C. What Are the Benefits of the Proposed LT2ESWTR?

As discussed previously, the LT2ESWTR is expected to substantially reduce drinking water related exposure to *Cryptosporidium*, thereby reducing both illness and death associated with cryptosporidiosis. As described in section II, cryptosporidiosis is an infection caused by *Cryptosporidium* and is an acute, typically self-limiting, illness with symptoms that include diarrhea, abdominal cramping, nausea, vomiting, and fever (Juranek, 1995). Cryptosporidiosis patients in sensitive subpopulations, such as infants, the elderly, and AIDS patients, are at risk for severe illness, including risk of death. While EPA has quantified and monetized the health benefits for reductions in endemic cryptosporidiosis that would result from the LT2ESWTR, the Agency was unable to quantify or monetize other health and non-health related benefits associated with this rule. These unquantified benefits are characterized next, followed by a summary of the quantified benefits.