

CT VALUES FOR *Cryptosporidium* INACTIVATION BY OZONE—Continued

Log credit	Water Temperature, °C <sup>1</sup>									
	≤0.5	1	2	3	5	7	10	15	20	25
3.0 .....	72	69	63	57	47	39	30	19	12	7.4

<sup>1</sup> CT values between the indicated temperatures may be determined by interpolation

(3) Systems may conduct a site-specific inactivation study to determine the CT values necessary to meet a specified *Cryptosporidium* log inactivation level, using a State-approved protocol. The alternative CT values determined from the site-specific study and the method of calculation must be approved by the State.

(d) *Ultraviolet light*. (1) Systems may claim credit for ultraviolet (UV) processes for inactivation of

*Cryptosporidium*, *Giardia lamblia*, and viruses. The allowable inactivation credit for each pathogen must be based on the UV dose delivered by the system's UV reactors in relation to the UV dose table in paragraph (d)(2) of this section.

(2) *UV dose table*. The log credits given in this UV dose table are for UV light at a wavelength of 254 nm as produced by a low pressure mercury vapor lamp. Systems may apply this

table to UV reactors with other lamp types through reactor validation testing (*i.e.*, performance demonstration) as described in paragraph (d)(3) of this section. The UV dose values in this table are applicable only to post-filter application of UV in systems that filter under subpart H of this part and to unfiltered systems meeting the filtration avoidance criteria in subparts H, P, and T of this part:

UV DOSE TABLE FOR *Cryptosporidium*, *GIARDIA LAMBLIA*, AND VIRUS INACTIVATION CREDIT

Log credit	<i>Cryptosporidium</i> UV Dose (mJ/ cm <sup>2</sup> )	<i>Giardia lamblia</i> UV dose (mJ/ cm <sup>2</sup> )	Virus UV dose (mJ/cm <sup>2</sup> )
0.5 .....	1.6	1.5	39
1.0 .....	2.5	2.1	58
1.5 .....	3.9	3.0	79
2.0 .....	5.8	5.2	100
2.5 .....	8.5	7.7	121
3.0 .....	12	11	143
3.5 .....	NA	NA	163
4.0 .....	NA	NA	186

(3) *Reactor validation testing*. For a system to receive inactivation credit for a UV reactor, the reactor must undergo the validation testing in paragraphs (d)(3)(i) and (d)(3)(ii) of this section, unless the State approves an alternative approach. The validation testing must demonstrate the operating conditions under which the reactor can deliver the UV dose required in paragraph (d)(2) of this section.

(i) Validation testing of UV reactors must determine a range of operating conditions that can be monitored by the system and under which the reactor delivers the required UV dose. At a minimum, these operating conditions must include flow rate, UV intensity as measured by a UV sensor, and UV lamp status. The validated operating conditions determined by this testing must account for the following: UV absorbance of the water; lamp fouling and aging; measurement uncertainty of on-line sensors; UV dose distributions arising from the velocity profiles through the reactor; failure of UV lamps or other critical system components; and inlet and outlet piping or channel configurations of the UV reactor.

(ii) Validation testing must include the following: full scale testing of a reactor that conforms uniformly to the UV reactors used by the system; and inactivation of a test microorganism whose dose response characteristics have been quantified with a low pressure mercury vapor lamp.

(4) *Reactor monitoring*. Systems must monitor their UV reactors to demonstrate that they are operating within the range of conditions that were validated by the testing described in paragraphs (d)(3)(i) and (d)(3)(ii) of this section to achieve the required UV dose in paragraph (d)(2) of this section. Systems must monitor for UV intensity as measured by a UV sensor, flow rate, and lamp outage and for any other parameters required by the State. Systems must verify the calibration of UV sensors and must recalibrate sensors in accordance with a protocol approved by the State.

#### Reporting and Recordkeeping Requirements

##### § 141.730 Reporting requirements.

(a) Systems must follow the requirements for reporting sampling schedules under § 141.703 and for

reporting source water monitoring results under § 141.707 unless they notify the State that they will not conduct source water monitoring due to meeting the criteria of § 141.701(f) or (g).

(b) Systems using uncovered finished water storage facilities must notify the State of the use of each facility no later than [Date 24 Months After Date of Publication of Final Rule in the **Federal Register**].

(c) Filtered systems and unfiltered systems that are required to install filtration must report their *Cryptosporidium* bin classification, as determined under using the procedures in § 141.709, to the State by the applicable dates in paragraph (c)(1) or (2) of this section.

(1) Systems that serve at least 10,000 people must report their initial bin classification no later than [Date 36 Months After Date of Publication of Final Rule in the **Federal Register**] and must report their bin classification determined using results from the second round of source water monitoring no later than [Date 138 Months After Date of Publication of Final Rule in the **Federal Register**].