CITY OF

PORTLAND, OREGON

BUREAU OF WATER WORKS

Dan Saltzman, Commissioner
Morteza Anoushiravani, P.E., Administrator
1120 SW 5th Avenue
Portland, Oregon 97204
Information (503) 823-7404
Fax (503) 823-6133
TDD (503) 823-6868

January 8, 2004

Water Docket
Environmental Protection Agency
Mail Code 4101T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Long Term 2 Enhanced Surface Water Treatment Rule, Proposed Rule
68 Federal Register 47639
Docket No. OW-2002-0039

Dear Sir or Madam:

The City of Portland, Oregon, Water Bureau appreciates the opportunity to review and provide comments on the Proposed Long Term 2 Enhanced Surface Water Treatment Rule (LT2).

Commissioner Dan Saltzman, the City of Portland elected official in charge of the Portland Water Bureau, submitted comments to the docket in November 2003. In his comments, Commissioner Saltzman requested EPA to include a waiver provision for the LT2 *Cryptosporidium* treatment requirement for unfiltered systems. His comments present the city's policy position on the proposed rule.

The comments in this letter specifically respond to several topics in the proposed rule where EPA has requested comments, and provide other feedback on specific technical, operational or economic information presented in the proposal.

We want to begin by acknowledging the strong commitment to working with utilities and other interested stakeholders that EPA has brought to the decade long process of developing the microbial/disinfection byproduct rules. We believe the involvement of these parties has produced rules that are better than they would have been if developed using a more traditional approach. Moreover, EPA's strong commitment to working with utilities to develop risk-based rules provides local communities with the flexibility to improve public health protection in a reasonable, cost-effective manner.

As an unfiltered system with uncovered finish water reservoirs, the proposed rule would have profound impacts on the Portland water systems and on the rates our customers pay for water service.

We estimate, for example, that the cost of treatment improvements for *Cryptosporidium* for the Bull Run source (250 MGD capacity) would range from a low of about $55 million[1] for ultraviolet light disinfection improvements to a high of about $202 million for a direct filtration or membrane filtration plant.

Comments on LT2 Monitoring Requirements

As an unfiltered system, we would expect to need the full amount of available time to make the kinds of treatment changes contemplated by this proposed rule. By initiating source water monitoring early, we give ourselves the greatest amount of time to develop and implement whatever changes may be needed. So, we have carefully reviewed the LT2 provisions for grandfathering source water monitoring data collected as part of the risk binning process.

In its LT2 proposal, EPA has suggested requirements for grandfathered data that would require that data to meet stringent requirements not presently in place or typically employed. This is a serious problem because many utilities have invested substantial amounts of money over the last few years, prior to the issuance of EPA's June 2003 guidance on Source Water Monitoring, to develop high quality information about their source waters. Utilities strongly supported the provision for grandfathering data in the EPA sponsored discussions about LT2 and its companion, the Stage 2 Disinfectant/Disinfection Byproducts Rule. We did so for four reasons:

1. The way data is used to determine which treatment bin a system falls in is such that the more data points used the smaller the likelihood of being misclassified. Analysis demonstrated that large systems taking only the minimum 24 samples have a much greater chance of being misclassified than those taking 48 or more samples;
2. Systems that were proactive in gathering *Cryptosporidium* data should be rewarded for their efforts by not having to needlessly repeat sampling;
3. Systems that established which bin they were in at an early point would have additional time to initiate corrective measures to insure compliance, if needed; and
4. Every system that used grandfathered data would reduce the realistically anticipatible problem of insufficient laboratory capacity.

We believe that the criteria for grandfathered data should be more flexible and that any requirements for such data should focus on the goal of insuring that systems are classified in the appropriate bin rather than strict compliance to analytical requirements that have not historically been in place and are impossible to conform with retroactively. The multiple benefits of allowing for grandfathering data clearly support such an approach.

As we reviewed the proposed monitoring requirements, we identified two other issues we believe are significant: the consequence of failing to complete monitoring and the consequence of failing to comply with the established monitoring schedule.

[1] Costs presented for Bull Run treatment are in 2001 dollars as developed for the use by the Citizens Panel on Bull Run Treatment

Although, as we read the language, we would not be directly affected by the LT2 language regarding missed samples, we feel strongly that EPA needs to reconsider the provision that would require that "any filtered system that fails to complete LT2ESWTR monitoring requirements must meet the treatment requirements for Bin 4."

This provision is unacceptable and fails to recognize that there are many situations why a scheduled sample would be missed that are beyond the control of the water utility and not included in the proposed list of exception conditions. Our own experience bears this out: We are one year into our two-year sampling program collecting *Cryptosporidium* monitoring data under the data grandfathering provisions. We have already had to resample twice due to problems with the shipment of the sample to the lab. As this example demonstrates, the problem was beyond our control, and as such it would be unreasonable for EPA to require a utility to provide the maximum treatment as a result of such unforeseeable and uncontrollable reasons.

One approach EPA might pursue to address the potential for missed samples would be to suggest that utilities build dates into their sampling schedules for additional samples in the event of missed samples, and provide reasons why the samples were missed. (e.g., it could be something like 30 sampling dates so that 6 extra dates above the minimum requirement of 24 be available if samples are missed) or make other reasonable provisions for make-up samples during the sampling period.

In addition to our concern about how EPA proposes to deal with missed samples, we are equally concerned with the consequence EPA is proposing for failing to meet the established sampling schedule. We understand the intent behind the sampling design, and believe that most utilities will bend over backwards to try to accomplish the required sample collection within the 2 days allowed. But we believe that EPA needs to acknowledge that there are times when it simply may not be feasible (or safe) to do so. It is totally inappropriate to penalize a utility for this reality by requiring it to install the highest level of treatment, especially when current data show that randomized sampling is equivalent if not superior to time-series sampling designs (Frey et al, 1998). Thus, providing some flexibility to be used in the event of unusual circumstances would make sense to include in this rule.

We believe that it would be appropriate and prudent for EPA to make reasonable provisions for flexibility regarding both the dates of sample collection and for re-sampling given that unforeseen circumstances may (and do) happen. But, should a really egregious example of missed sampling or scheduling issues occur, we recommend that EPA use existing compliance procedures coupled with a system's rights to appeal these kinds of actions as a more appropriate action.

Comments on Requirement for the Use of Two Disinfectants by Unfiltered Utilities

We concur with the proposed requirement for the use of two disinfectants. This requirement augments the public health protections of unfiltered utility watershed and source water protection programs that are an important part of our multiple barrier system for public health protection. By continuing to meet the filtration avoidance criteria and augmenting disinfection capabilities, unfiltered systems enhance the reliability and resiliency of the management and treatment practices that our communities depend on to provide safe, high quality water to them under every circumstance.

While supporting the provision for two disinfectants, we oppose any proposal that would specify an inactivation requirement for each disinfectant because it may unnecessarily limit our ability to minimize DBPs while optimally meeting microbial inactivation requirements. On the other hand, EPA's alternate proposal that would allow inactivation to be achieved by using a combination of one or more disinfectants would provide the flexibility to achieve LT2 inactivation requirements while also allowing utilities to configure and operate treatment processes to minimize DBP's. While this alternative approach may provide marginally less protection against unregulated pathogens, it would be more protective against the potential formation of unregulated disinfection byproducts.

Comments on Treatment Requirements for Unfiltered Systems with Higher *Cryptosporidium* Levels

We are not aware of any large unfiltered system that would be required to meet even the already provided for requirement to inactivate 3 log of *Cryptosporidium, so* we aren't sure why EPA is raising this issue. None of the data considerable amount of data from unfiltered systems that EPA has seen would indicate that this action is necessary. If EPA should decide to proceed to included it, we believe that it should include a justification for it, including presenting data, that would indicated that including this provision is necessary.

Comments on Membrane Filtration

EPA requested comments on the frequency for conducting direct integrity monitoring. We believe indirect integrity monitoring should be conducted on a 15-minute interval. Based on this frequency, the frequency of direct integrity testing could be reduced from once a day to once per week. As membrane plants become larger, it will likely become more difficult to conduct direct testing of every module in the system on a daily basis. Weekly or less frequent direct integrity monitoring would appear to be adequate so long as indirect integrity monitoring is conducted every 15 minutes.

Comments on Ultraviolet Light (UV)

The EPA has proposed a standard of compliance with inactivation requirements, for unfiltered systems using UV for disinfection, at the 95th percentile. A compliance percentile for filtered systems has not been set by the EPA, but has been left to the State or primacy agency for determination. We believe filtered and unfiltered systems should be held to the same performance standard, measured monthly, particularly when both are subject to the same events and conditions that can lead to water that could be considered "off specification". We concur with the use of the 95th percentile inactivation compliance specification and believe that this will provide an appropriate level of public health protection.

The differences between the UV dose tables presented in §141.729 and in the UV Guidance Manual lead to concern as to which will take regulatory precedence. There appears to be a compounding of safety factors when the §141.729 table is translated to the UV Guidance Manual, which, in turn, leads to overly conservative dosing to achieve inactivation. We believe the values in the §141.729 table should be used in the final rule and that the Manual provide the criteria for reasonable use of safety factors and the reduction equivalent dose.

The criteria for UV reactor validation testing require full scale testing at flows and conditions representing "worst case" scenarios. Given that few systems have the capability of recreating these conditions on-site, these validation tests are often relegated to the few validation facilities available in the world today. Of these, the UV Validation Facility located in Portland, Oregon, is currently the only one with the capacity to test reactors with capacities as large as 40 MGD. We are concerned that EPA's proposal to limit the use of Computational Fluid Dynamic (CFD) Modeling in reactor validation and apply an additional safety factor for uncertainty of the model when it is used will result in under-utilizing a very useful design tool. The key to improving the applicability of CFD is a <u>properly calibrated</u> CFD model, and we would highly recommend that EPA find a way to encourage rather than discourage development of an approach that could play a significant role in the industry and provide an additional means of validation for the larger units.

Current UV disinfection technology uses mercury in the reactor lamps as the source for the ultraviolet radiation. While risk of exposure is minimal in the event of breakage, even in multiple failures, there is, nonetheless, the public perception of extreme risk in any release into drinking water. The solutions offered in the Guidance Manual, i.e. quick closing valves, downstream containment, etc., aren't ideal. To suggest so is misleading. A better approach would be to emphasize safe handling; spill prevention and response planning in the Manual, and provide a public acknowledgement of exposure risk.

Comment - Uncovered Finished Water Storage Facilities

The Portland Water Bureau acknowledges that the options presented for dealing with uncovered finished water reservoirs are the realistic solutions for dealing with potential microbial contamination for such facilities, although we note the options provide different levels of benefit in addressing security issues that have been of growing concern over the last several years.

Because we have been actively working to address our open reservoirs, we can provide very specific feedback on the costs of replacing large open reservoirs with buried storage or providing floating covers:

- Replacement of two reservoirs (75 MG) with buried storage $65 Million
- Providing floating covers for two reservoirs (30 MG) $ 2 Million

Within a 20 year period, we would expect to have to either replace floating covers installed on the two reservoirs now or, should facility conditions warrant, may need to incur the full cost of replacing reservoirs with buried storage.

EPA has also requested information related to impacts of open finished water reservoirs on corrosion control treatment. Portland has some system specific information based on our use of a single chemical, sodium hydroxide, to adjust Bull Run water's pH for corrosion control. During an October 2002 workshop, a technical advisory committee consisting of several experts in the field of corrosion control, including EPA's in-house expert, advised that pH levels at or above 8.0, an action under discussion to improve compliance with the Lead and Copper Rule, would be unstable across open reservoirs. They were concerned about the potential adverse affects of wide pH level fluctuations in the distribution system on both control of lead from plumbing and red water from unlined cast iron and galvanized pipes. We have reviewed pH data across our existing open reservoirs. At pH 7.5 - 7.8, no significant change in pH was noted.

Thank you again for the opportunity to provide input on this proposed rule. We will continue to participate and partner with you to improve the quality and safety of the nation's drinking water supply. Please feel free to contact us if you have questions.

Sincerely,

Morteza Anoushiravani
Administrator
City of Portland Bureau of Water Works
1120 SW 5th Avenue, Room 600
Portland, OR 97204
503-823-7555