



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Bureau of Safe Drinking Water

Pennsylvania's Proposed Disinfectant Residual Requirements and Supporting Data

TAC Board Meeting

May 26, 2015

Proposed Disinfectant Residual

Why is DEP amending the minimum acceptable residual in the distribution system?

- Pennsylvania's regulatory definition of a detectable residual (0.02 mg/L) does not represent a "real" detectable residual due to analytical method limitations and interferences. These interferences cause false positive results.
- As a result, Pennsylvania's treatment technique is invalid and unenforceable.
- Pennsylvania's treatment technique does not represent a meaningful residual that is protective of public health.

Link to RTCR Rulemaking

How are the disinfectant residual requirements linked to the RTCR?

- TCR samples and disinfectant residuals are paired samples.
- § 141.63(e) BAT for RTCR includes “Maintenance of a disinfectant residual throughout the distribution system”.
- § 142.16(q) - special primacy requirements for states to define and provide examples of sanitary defects (e.g. lack of an adequate residual), and provide written guidance on the assessment and corrective action phase of the rule.

Summary of Changes

In response to TAC Board and stakeholder input, DEP has made the following changes:

- Pre-draft levels presented at June 18, 2014 TAC meeting: 0.30 mg/L (free) and 1.0 mg/L (total)
- Pre-draft levels presented at April 21 & 30, 2015 meetings: 0.30 mg/L (free) and 0.50 mg/L (total); higher EP levels were deleted
- Pre-draft levels presented today (May 26, 2015): 0.20 mg/L (free or total)

Details About Current Proposal

Current proposal:

- 0.20 mg/L (free or total)
- Report all sample results with a 95% compliance determination
 - Monitor daily? 5% of samples with low residuals shall not be repeated the following month?
- Residuals < 0.20 mg/L must be restored within 24 hours or an excursion has occurred
- Systems using chloramines must develop a nitrification control plan

Justification for Current Proposal

- Residual of 0.20 mg/L (free or total): represents a “real” and meaningful disinfectant residual that is supported by sound science
- 95% compliance determination: addresses the challenge of maintaining a residual at all locations all the time; the no-repeat clause ensures equitable water quality
- 24-hour period for restoration: supports implementation of corrective actions which will improve water quality
- Nitrification control plan: ensures that adequate residuals and other water quality parameters are maintained where and when needed

Justification for Current Proposal

Science and standards that support 0.20 mg/L:

- Colorado (CDPHE) Study, 2014.
- LeChevallier et al., 1996. *Appl. Environ. Microbiol.* 62(7): 2201-2211.
- WRF, 2010. *Criteria for Optimized Distribution Systems.*
- 10 States Standards, 2012.
- Consistent with 16 other states; 3 states have higher residuals
- Supported by data from Pennsylvania and other states

Pennsylvania Public Water Systems

	Total PWSs*	CWS	NTNC	TNC
Number	8,650	1,978	1,094	5,578
% of Total	100%	22.9%	12.6%	64.5%

	Total PWSs	1 sample	2 samples	> 2 samples
# PWSs	8,650	7,888	321	431
% PWSs	100%	91.2%	3.8%	5%

PA Community Water Systems

	Total	1 sample	2 samples	> 2 samples
# Consecutive	171	69	50	52
# Not Consecutive	1,807	1,271	180	356
Total CWSs	1,978	1,340	230	408
% CWSs	100%	68%	12%	20%

- 34 consecutive systems add booster disinfection
- 7 non-consecutive systems do not have chlorine disinfection

CWS Summary Data: Jan 2012-Present

Chlorine Residuals	1 sample	2 samples	> 2 samples
Total # records	48,553	11,424	19,921
# < 0.02 ppm	252	13	25
# < 0.20 ppm	1,880 (3.9%)	313 (2.7%)	333 (1.7%)
# < 0.30 ppm	3,194	608	793
Average value, ppm	0.9656	0.9263	0.9531
Lowest value, ppm	0	0	0
Highest value, ppm	19.4	9.4	3.9

RTCR Assessments Summary

PWS Type	Level 1 Assessments	Level 2 Assessments	Total Assessments
Community	44	17	61
Transient	362	153	515
Nontransient	38	18	56
Total:	444	188	632

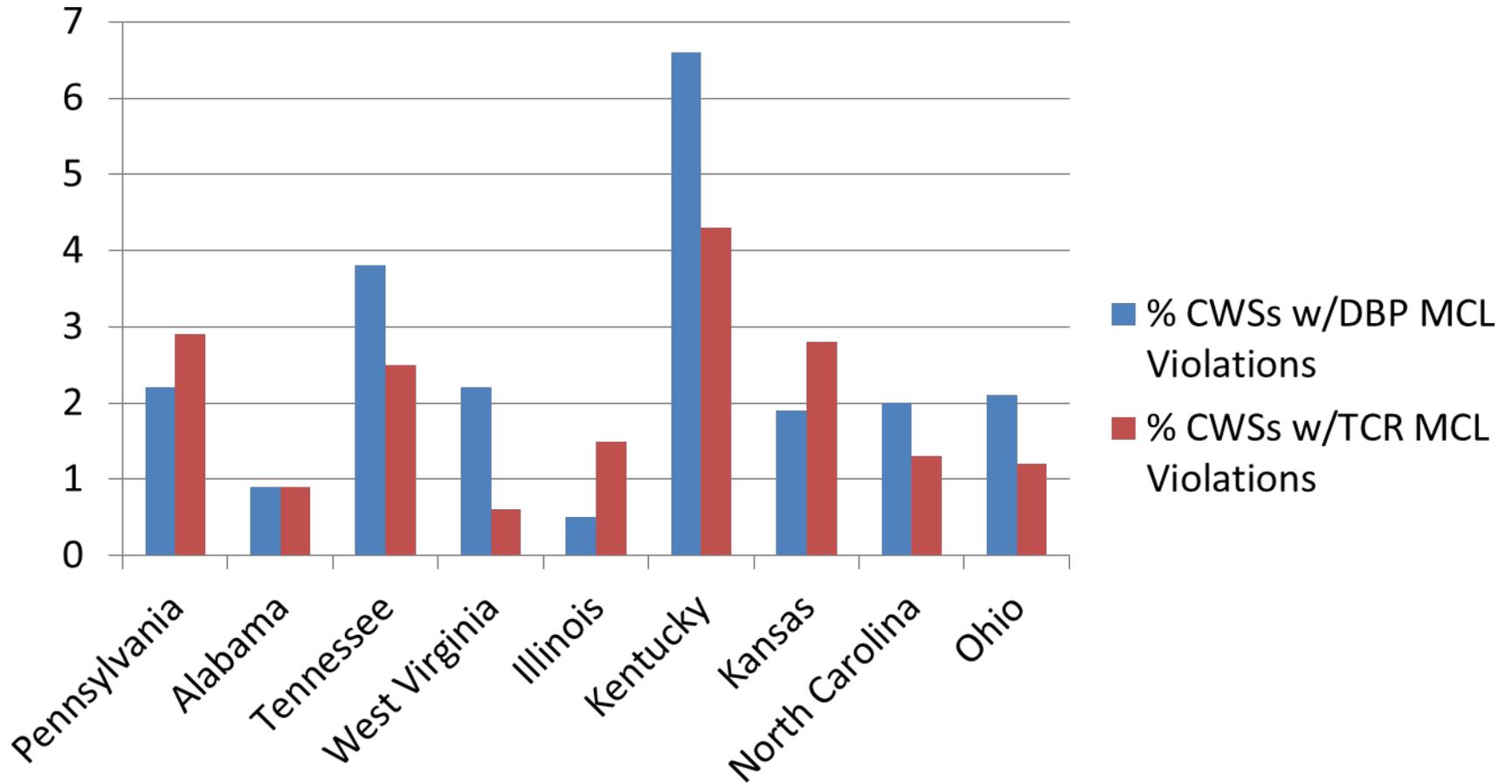
- Estimated # assessments /year
- Based on data averaged from 2009 - 2014

Additional Supporting Data

State TCR and DBP compliance data – (Source: EPA's ECHO (Enforcement & Compliance History Online) Database)

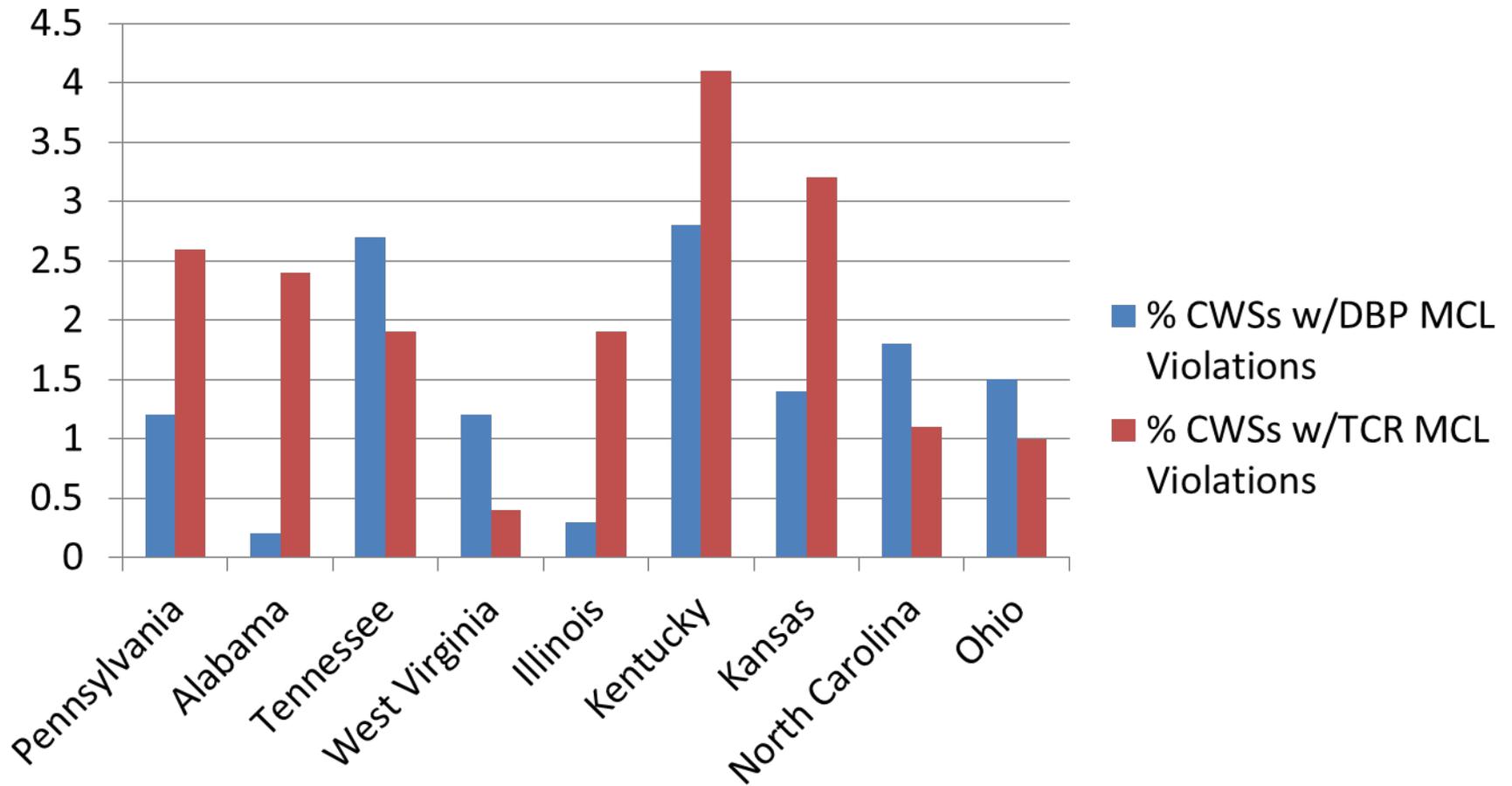
Additional Supporting Data

% CWSs w/ FY2011 Violations – States w/ Mandatory Disinfection & Residuals ≥ 0.2 mg/L



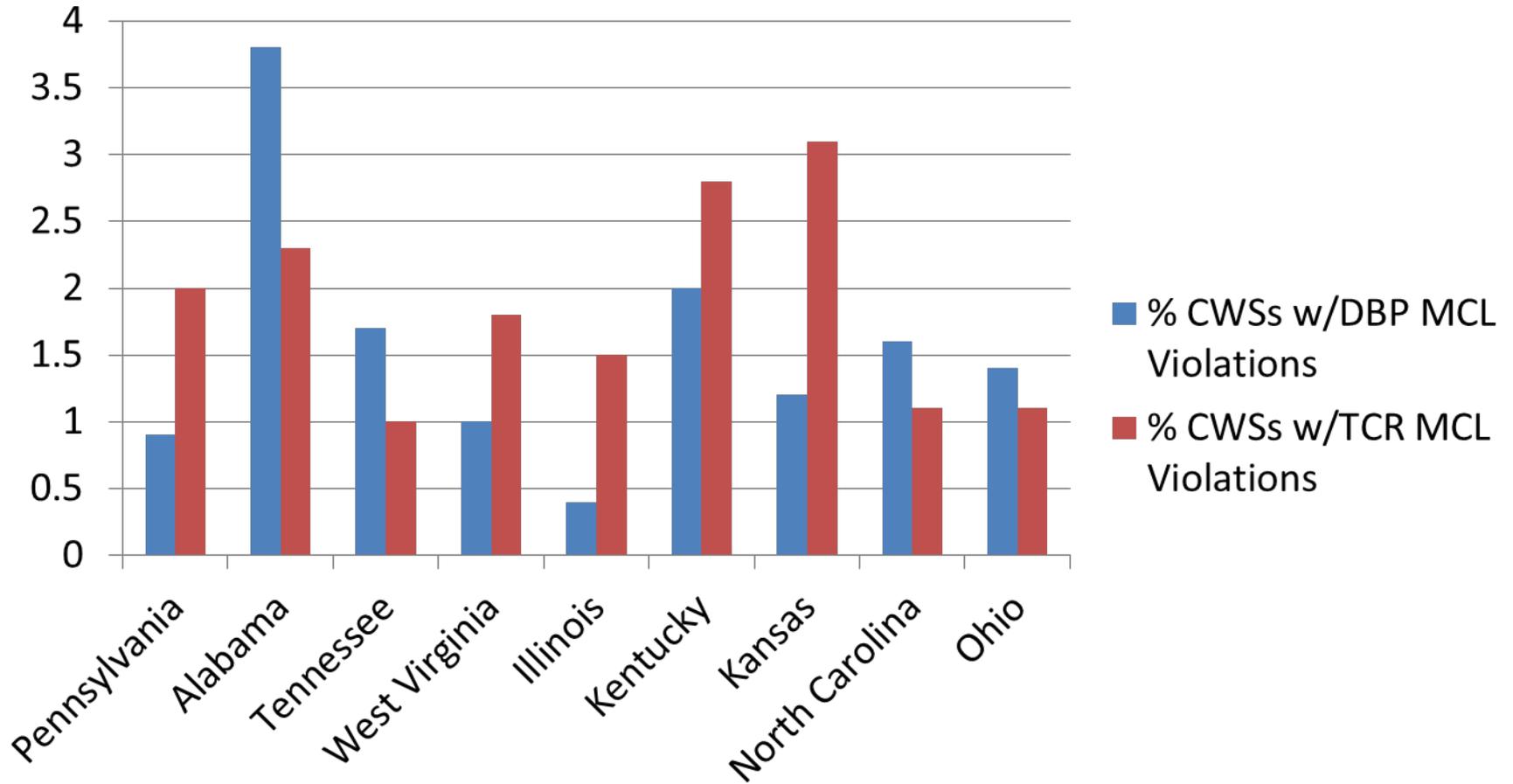
Additional Supporting Data

% CWSs w/ FY2012 Violations – States w/ Mandatory Disinfection & Residuals ≥ 0.2 mg/L



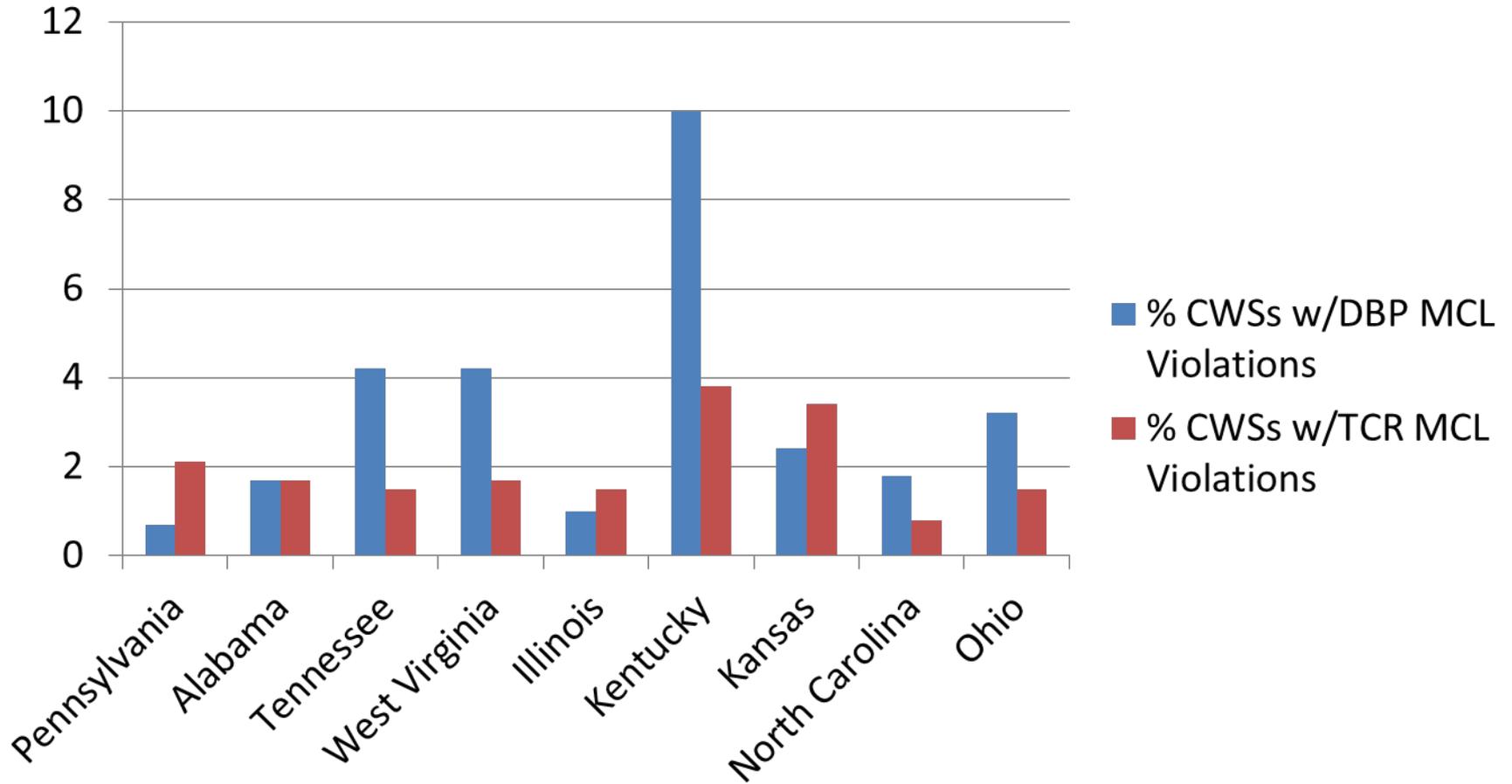
Additional Supporting Data

% CWSs w/ FY2013 Violations – States w/ Mandatory Disinfection & Residuals ≥ 0.2 mg/L



Additional Supporting Data

% CWSs w/ FY2014 Violations – States w/ Mandatory Disinfection & Residuals ≥ 0.2 mg/L





pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Bureau of Safe Drinking Water

QUESTIONS?

Lisa Daniels

Dawn Hissner

717-787-9633