

# Water Quality and Monitoring Compliance 2007 in Review

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Monitoring, Reporting and Enforcement Unit

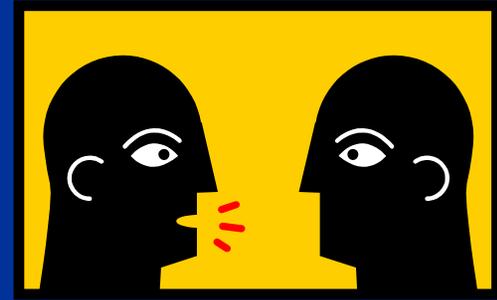
Annual Technical Conference and Vendor Exposition  
February 26, 2008

Drinking Water Section

# Monitoring, Reporting and Enforcement Unit

<b>Monitoring and Reporting</b>	<b>Enforcement</b>
Inventory Maintenance	Notices of Violation
Water Quality Monitoring Schedules	Civil Penalties
Maximum Contaminant Level Violations	Consent Orders
Monitoring and Reporting Violations	Administrative Orders
Treatment Technique Violations	
Public Notification	
Consumer Confidence Reports	
Data Management	

# Discussion Topics



## **Where we have been (The Past)**

- 💧 Maximum Contaminant Level Compliance Trends
- 💧 Monitoring and Reporting Compliance Trends

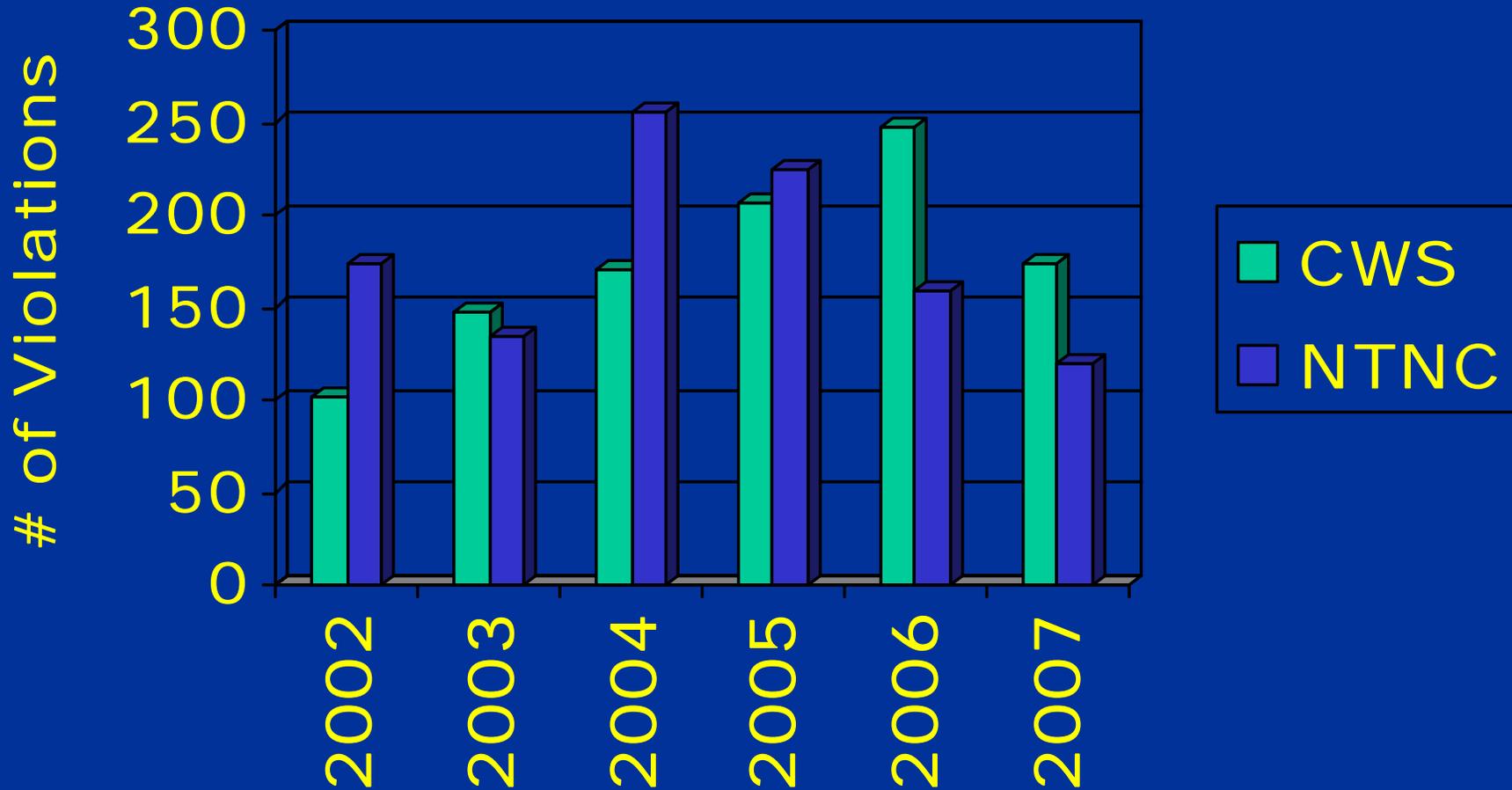
## **Where we are (The Present)**

- 💧 Rule-Based Compliance Summaries
- 💧 Tips to achieve and maintain compliance

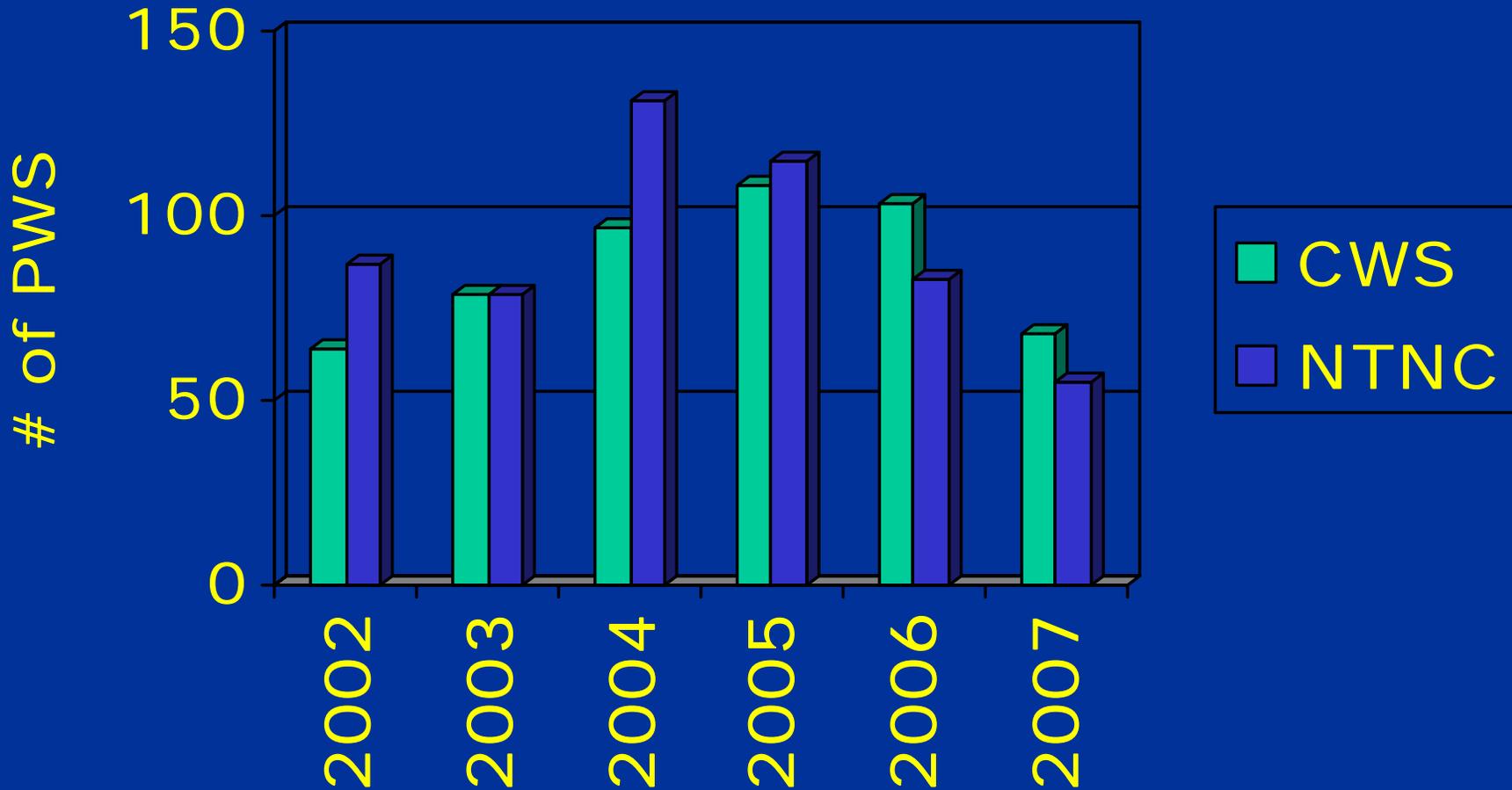
## **Where we are going (The Future)**

- 💧 New Rules
- 💧 Anticipated changes

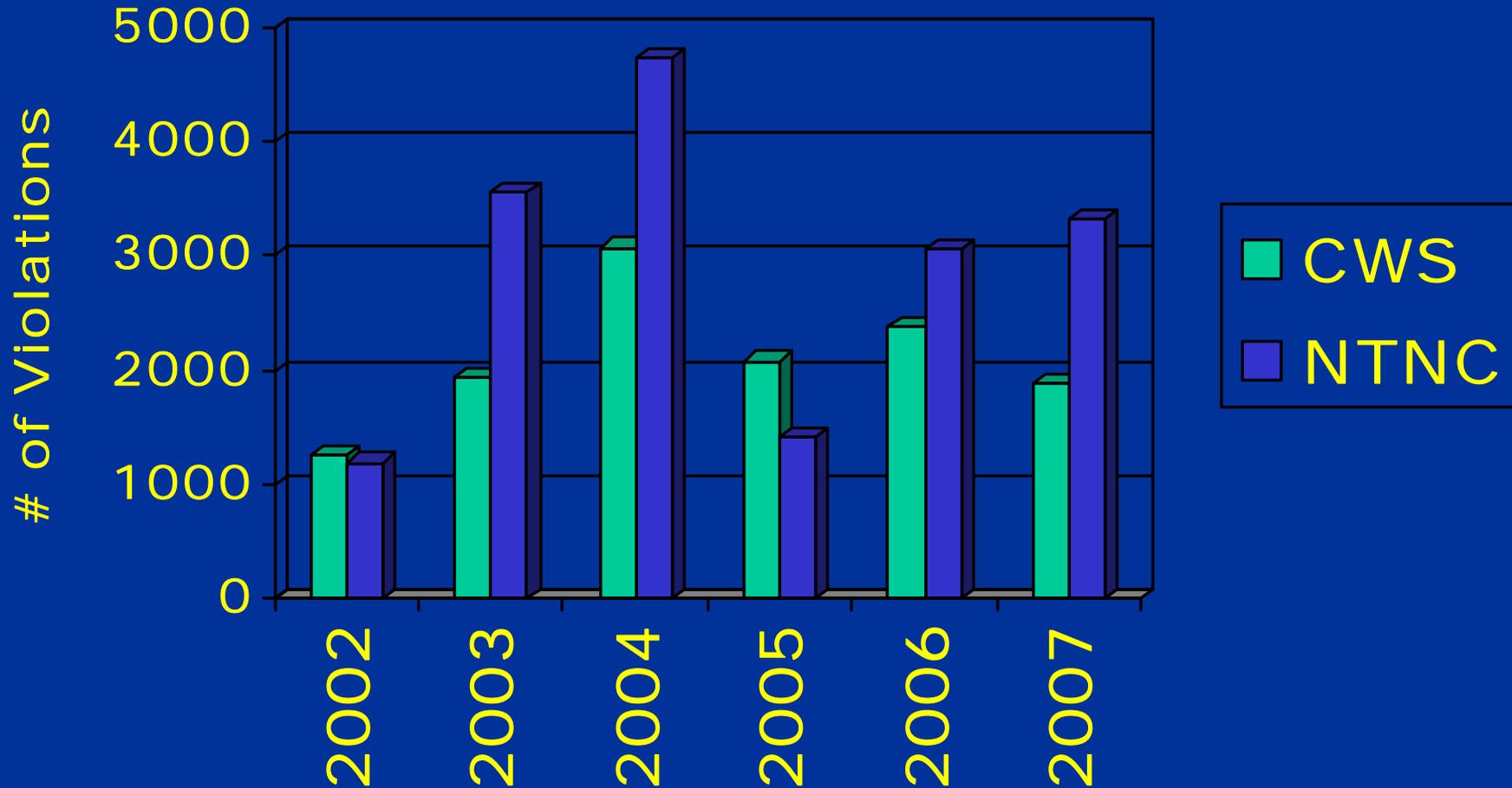
# Maximum Contaminant Level Violations



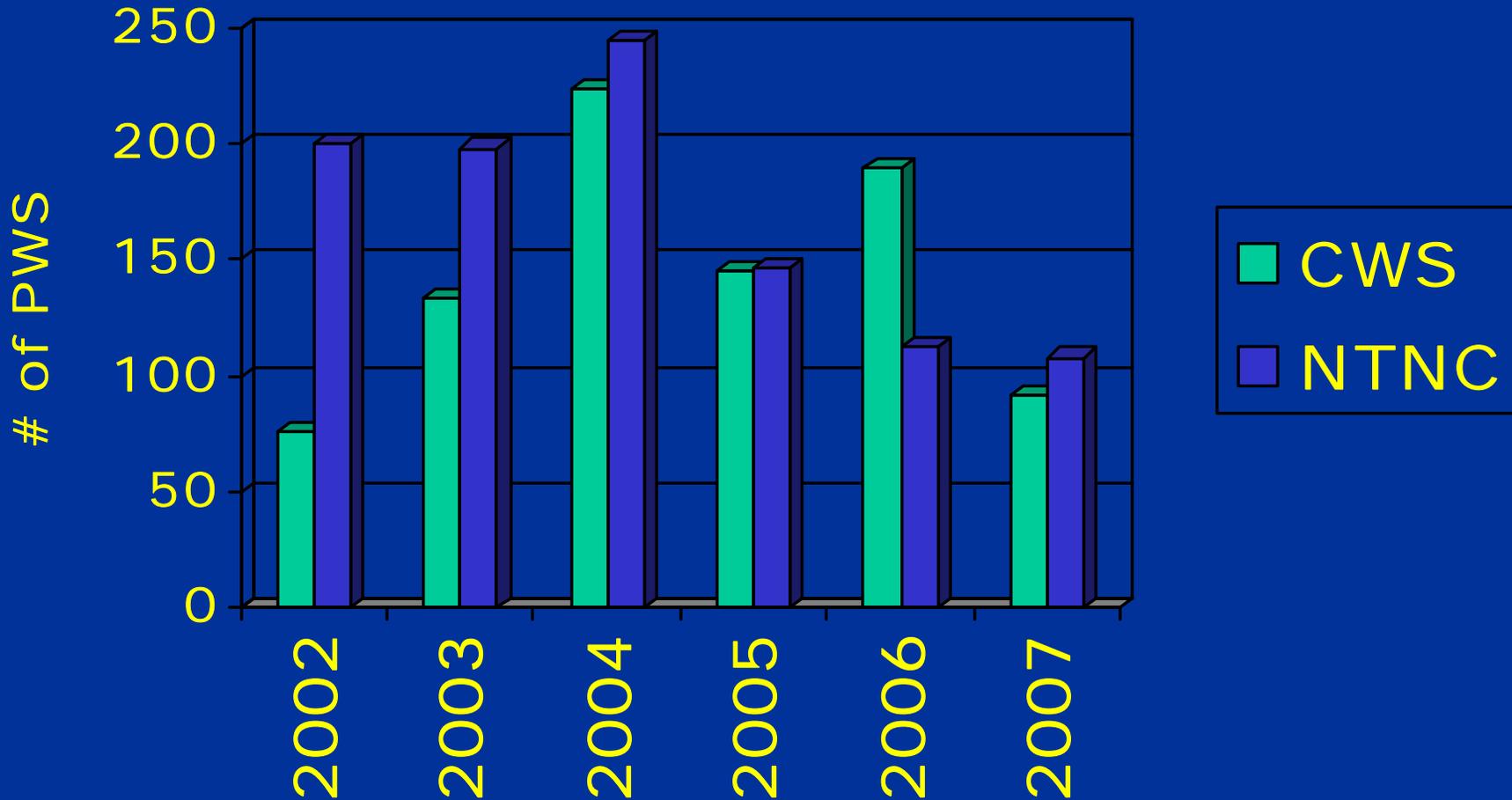
# Maximum Contaminant Level Violations



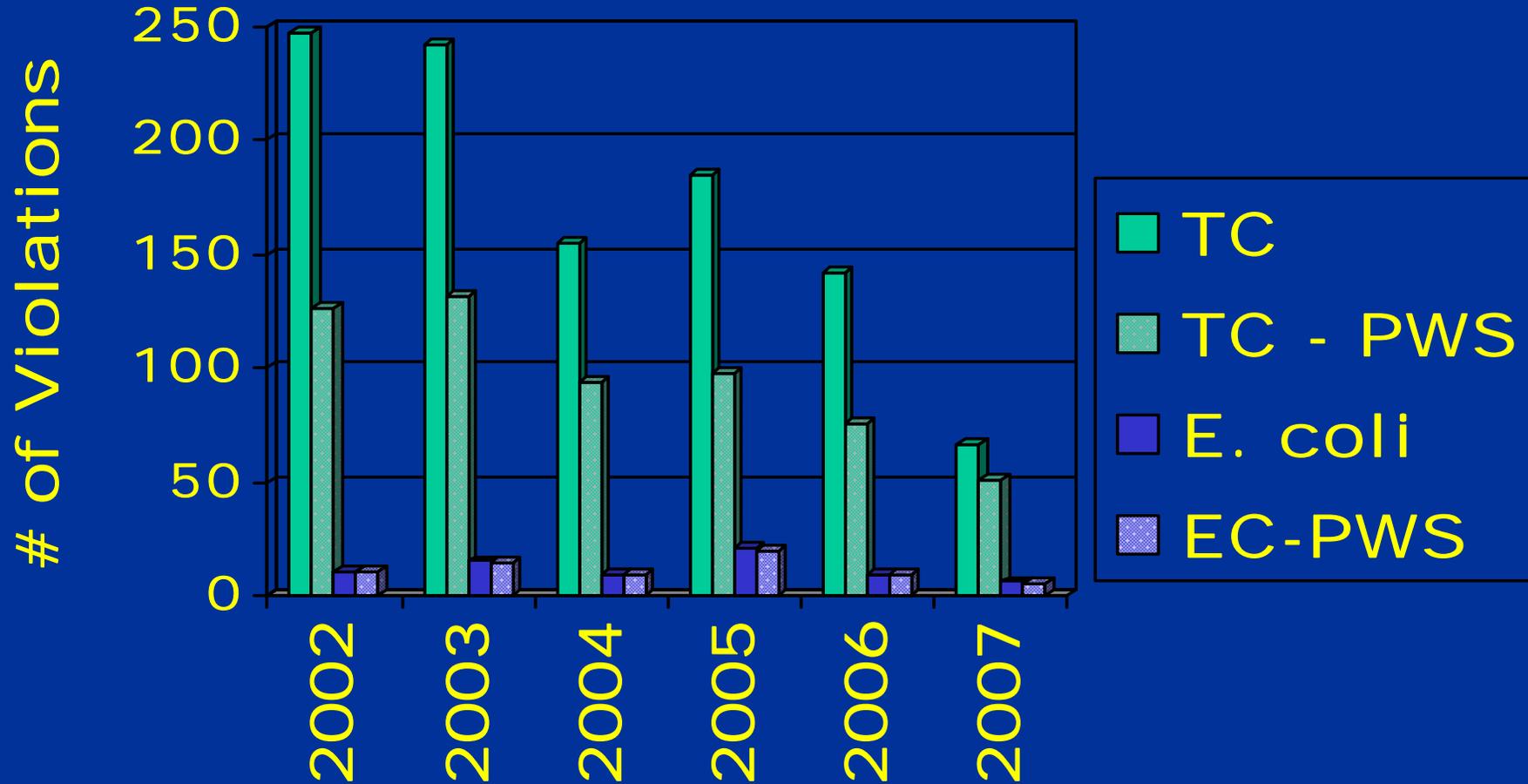
# Monitoring and Reporting Violations



# Monitoring and Reporting Violations



# Total Coliform Rule MCL Violations



# Total Coliform Rule



Year	MCL			M&R
	Total	TC	E. coli	Total
2002	247	236	11	295
2003	254	238	16	255
2004	161	152	9	395
2005	188	167	21	244
2006	144	135	9	187
2007	70	64	6	101

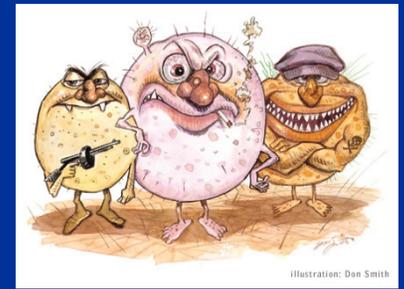
# Total Coliform Rule



## TCR Compliance Reminders and Tips:

- 💧 Standard monitoring for a Community Water System (CWS) is monthly.
- 💧 Systems shall collect samples at regular intervals throughout the month (Exception: GWS serving <1000 may collect all samples on a single day if they are taken from different sites.).
- 💧 The residual disinfection concentration shall be measured at the same time as each Total Coliform sample (routine or repeat).
  - Presence will invalidate the sample if the system is not approved for continuous chlorination.

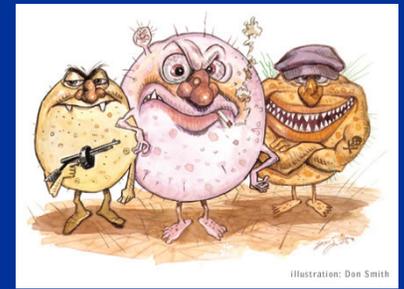
# Total Coliform Rule



## TCR Compliance Reminders and Tips:

- 💧 All TC Positive samples shall be further analyzed for fecal coliforms or E. coli.
- 💧 Upon notification of an E coli or fecal positive, the system must call the Department by the end of the day
- 💧 A minimum of five routine samples shall be collected in the calendar month following any routine TC+
- 💧 Repeat samples shall be collected within 24 hours of the confirmed TC positive result.
  - If samples cannot be collected within 24 hours, the Department may grant an extension up to 96 hours.
- 💧 1 routine sample = 4 repeat samples
- 💧 2 or more = 3 repeat samples per positive routine

# Total Coliform Rule



## TCR Compliance Reminders and Tips:

- 💧 Repeat samples shall be collected at the site of the Original TC+, within 5 service connections Upstream and Downstream of the original TC+ and from any Other location.
- 💧 Process continues until all repeat samples are TC- or the system is in violation of the MCL.
- 💧 TC+ samples can be invalidated if:
  - Laboratory verifies improper sample analysis, OR
  - System determines that the contamination is a domestic or non-distribution system problem, OR
  - The Department has substantial grounds that the situation does not reflect water quality in the distribution system

# Total Coliform Rule



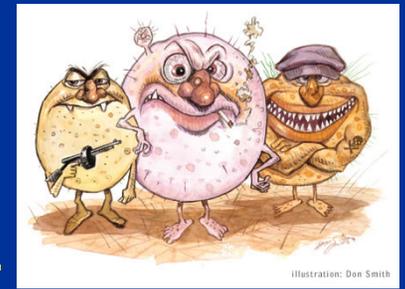
## Total Coliform Rule Compliance:

### Total Coliform MCL Violation:

- 💧 ≤40 samples collected per month:
  - >1 TC+ sample
- 💧 >40 samples collected per month:
  - 5.0 % of total samples TC+
- 🔴 E.Coli / Fecal MCL Violation:
  - 🔴 Repeat EC/FC+
  - 🔴 Routine EC/FC+ and Repeat TC+
  - This is an acute risk violation!**
- 💧 TCR MCL violations must be reported to the DWS no later than the end of the next business day after learning of the violation.



# Total Coliform Rule



## Public Notification (PN) Requirements:

### 🔴 Tier 1 Violation (PN within 24 hours)

- TCR MCL Violation (**Acute Risk**)

### 🟡 Tier 2 Violation (PN within 30 days)

- TCR MCL Violation
- TCR Monitoring and Reporting Violation

# Phase II/V Rules



Year	Phase II/V MCL		Phase II/V M&R	
	Total	PWS	Total	PWS
2002	7	7	2029	60
2003	6	5	4830	125
2004	27	106	5866	144
2005	29	91	5403	101
2006	36	73	3925	91
2007	48	47	4559	97

# Phase II/V Rules



Contaminant	Base Sampling Requirement		Reduced Sampling Requirement	
	Ground Water	Surface Water	Ground Water	Surface Water
Asbestos	Every 9 years	Every 9 years	N/A	N/A
Nitrate, Nitrite	Annually	Quarterly	N/A	Annually
Inorganic Chemicals	Every 3 years	Annually	N/A	N/A
Organic Chemicals	Quarterly	Quarterly	Annually*	Annually
Pesticides, Herbicides and PCBS	Quarterly	Quarterly	Systems serving > 3300, two quarters per year every three years Systems serving <= 3300, every three years	

💧 Monitoring is required at each active entry point to the distribution system

# Phase II/V Rules



## Phase II/V Rule Compliance Reminders and Tips:

### Increased Monitoring:

- 💧 Quarterly monitoring is automatic beginning in the following quarter.
  - A reminder letter is sent out by the DWS
- 💧 Nitrate and Nitrite:  $\geq 50\%$  of the MCL
- 💧 Inorganic Chemicals:  $>$  MCL
- 💧 Organic Chemicals: Any detection
- 💧 Pesticides, Herbicides and PCBs: Any detection

# Phase II/V Rules



## Phase II/V Rule Compliance Reminders and Tips:

### Reduced Monitoring:

- 💧 Must be granted in writing by the DWS.
- 💧 Is not automatic. When eligible, the PWS should contact the DWS by phone or in writing.
- 💧 Many scenarios for eligibility. In general, a PWS may be eligible for reduced monitoring after 4 consecutive quarters of results less than the MCL.
  - Refer to Section 19-13-B102(e)(7)(C) of the Regulations of Connecticut State Agencies for specifics.
- 💧 Waivers must be requested in writing.

# Phase II/V Rules



## Phase II/V Rule Compliance Reminders and Tips:

### Confirmation Samples:

- 💧 The DWS may require a confirmation sample within 2 weeks for any result that exceeds an MCL.
- 💧 Required within 24 hours for any Nitrate and Nitrite result that exceeds the MCL; OR

# Phase II/V Rules



## Nitrate and Nitrite Compliance:

- 💧 When nitrate and nitrite results exceed the MCL, the system shall take a confirmation sample within 24 hours
- 💧 Systems unable to comply with the 24-hour sampling requirement shall immediately provide a public notification to the customers and shall collect a confirmation sample within 2 weeks
- 💧 The results of the initial and confirmation samples will be averaged to determine compliance with the MCL
- 💧 Notify the DWS immediately upon receiving any nitrate or nitrite results above the MCL to determine the appropriate course of action



# Phase II/V Rules



## Phase II/V Rule Compliance:

### Compliance:

- 💧 The results of all available results will be averaged to determine compliance with an MCL.
- 💧 Compliance is based on a Running Annual Average (RAA) calculated quarterly, except Nitrate and Nitrite.
- 💧 Nitrate and Nitrite compliance is based on a Monitoring Period Average (MPA).
- 💧 All MCL Violations must be reported to the DWS within forty-eight (48) hours.

# Phase II/V Rules



## Public Notification (PN) Requirements:

- 💧 Tier 1 Violation (PN within 24 hours)
  - Nitrate and Nitrite MCL Violations (Acute Risk)
- 💧 Tier 2 (PN within 30 days)
  - All MCL Violations, except Nitrate and Nitrite
  - Nitrate and Nitrite monitoring and reporting violations
- 💧 Tier 3 (PN within 365 days)
  - All monitoring and reporting violations, except Nitrate and Nitrite

# Lead and Copper Rule



Year	LCR AL		LCR M&R	
	Total	PWS	Total	PWS
2002	16	13	87	84
2003	70	28	90	86
2004	30	28	92	74
2005	27	25	47	45
2006	37	35	40	34
2007	17	16	28	23

# Lead and Copper Rule



## LCR Compliance Reminders and Tips:

- 💧 First draw samples must be collected at cold water taps in homes/buildings that are typically used for consumption.
  - Each first-draw tap sample shall be one (1) liter in volume and have stood motionless in the plumbing system of each sampling site for at least six (6) hours.
- 💧 Systems unable to collect first-draw samples based on operational constraints (i.e. continuous operation) may substitute non-first-draw samples provided notification is made to the DWS in writing.

# Lead and Copper Rule



## LCR Compliance Reminders and Tips:

- 💧 Standard monitoring is conducted every 6 months.
- 💧 Eligible for reduced monitoring (Annual) if system meets both action levels during two consecutive 6-month monitoring periods.
- 💧 Eligible for reduced monitoring (Triennial) if system meets both action levels during three consecutive annual monitoring periods.
- 💧 Systems on reduced monitoring shall collect all samples during the months of June, July, August and September (collection period).

# Lead and Copper Rule



## LCR Compliance Reminders and Tips:

- 💧 An exceedance of either action level triggers other requirements:
  - Water Quality Parameter Monitoring
  - Corrosion Control Treatment (CCT) Evaluation and Installation
  - Source Water Monitoring/Treatment
  - Lead Public Education (lead exceedance only)
  - Lead Service Line Monitoring and/or Replacement (repeated lead exceedance only)
  - Copper Public Notification (Tier 2) (CT requirement only)

# Lead and Copper Rule



## LCR Compliance Reminders and Tips:

- 💧 Collect routine samples as early as possible in the collection period.
  - Allows time to complete triggered Water Quality Parameter monitoring requirements.
- 💧 When completing the Corrosion Control Treatment Steps, continue monitor during each six-month monitoring period.
  - Installation of treatment may be suspended if two consecutive six-month periods are below the action level for lead and copper.

# Radionuclides Rule



Year	RAD MCL		RAD M&R	
	Total	PWS	Total	PWS
2002	14	7	38	9
2003	22	7	73	21
2004	29	12	200	39
2005	44	9	330	43
2006	82	23	476	99
2007	97	20	65	14

# Radionuclides Rule



## RAD Rule Compliance Reminders and Tips:

- 💧 Sampling must be conducted at each entry point.
- 💧 Initial monitoring must be completed by 12/31/07
- 💧 Collect samples early in the quarter to allow sufficient time for laboratory analysis and reporting
- 💧 Four consecutive quarters are required to be eligible for reduced monitoring
- 💧 Waivers are available after two quarters and must be requested and approved in writing
- 💧 Uranium results should be converted to ug/L, where necessary, for MCL compliance
  - Uranium in pCi/L multiply by 1.49 to get ug/L

# Radionuclides Rule



## RAD Rule Compliance Reminders and Tips:

- ◆ Uranium in pCi/L is used to calculate “Net Gross Alpha” (Gross Alpha Particle Activity excluding Uranium).
  - ◆ Net Gross Alpha = Total Gross Alpha – Uranium
- ◆ PWS that monitors for Gross Beta and has treatment with a potassium additive should also test for potassium 40. PWS can subtract the potassium 40 result from Gross Beta. (Gross Beta – (K40 mg/l x 0.82))
- ◆ If the Gross Beta result is greater than 50 pCi/l (after subtracting potassium 40), then the PWS must contact the DWS immediately. This is a screening level for other parameters. Additional monitoring, which will be determined by the State, will be required.

# Radionuclides Rule



## Public Notification (PN) Requirements:

Tier 2 (PN within 30 days)

- 💧 All MCL Violations

Tier 3 (PN within 365 days)

- 💧 All monitoring and reporting violations

# Stage 1 Disinfectants and Disinfection Byproducts Rule

Year	Stage 1 MCL/MRDL		Stage 1 M&R	
	Total	PWS	Total	PWS
2004	3	43	247	87
2005	8	4	110	36
2006	10	5	85	45
2007	1	1	63	35

# Stage 1 Disinfectants and Disinfection Byproducts Rule

## Stage 1 Rule Compliance Reminders and Tips:

- 💧 Applies to all CWS and NTNC that deliver water treated with a primary disinfectant.
- 💧 Disinfectant Residual MRDLs: Chlorine, Chloramine, Chlorine Dioxide.
- 💧 Disinfectant By-Product MCLs: Total Trihalomethanes (TTHM), Total Haloacetic Acids (HAA5), Chlorite, Bromate.
  - Compliance is based on a running annual average calculated quarterly, exceptions:
    - Chlorite (monthly average)
    - Chlorine Dioxide (Daily)

# Stage 1 Disinfectants and Disinfection Byproducts Rule

## Stage 1 Rule Compliance Reminders and Tips:

- 💧 Treatment Technique Requirement for removal of Total Organic Carbon for systems using surface water or ground water under the direct influence of surface water.
- 💧 Systems required to monitor TTHM and HAA5 annually must collect samples during the third calendar quarter (July 1 to September 30).
- 💧 Chlorine residuals must be collected at the same time and location as each Total Coliform Rule sample.

# Stage 1 Disinfectants and Disinfection Byproducts Rule

## Public Notification (PN) Requirements:

### Tier 1 (PN within 24 hours)

- ☛ Chlorine Dioxide MRDL

### Tier 2 (PN within 30 days)

- ☛ All MCL Violations
- ☛ All other MRDL Violations

### Tier 3 (PN within 365 days)

- ☛ All monitoring and reporting violations

# Public Notification Rule



## PN Rule Compliance Reminders and Tips:

- 💧 Violations are classified into three tiers as defined in RCSA 19-13-B102(a) – Definitions.
- 💧 Notices must be sent to all persons served within the period specified by each tier:
  - Tier 1: 24 hours
  - Tier 2: 30 days
  - Tier 3: 365 days
- 💧 Clock for notification starts when the system learns of the violation.
- 💧 When reporting a violation, a PN template can be provided.
- 💧 Minimum general content of the notice must contain ten (10) required elements.

# Public Notification Rule



## PN Rule Compliance Reminders and Tips:

- 💧 All violation letters include a PN template.
- 💧 When properly completed, the template will address the ten (10) requirements elements.
- 💧 Any deviations from the template should be submitted to the DWS for approval.
- 💧 Certification of Compliance due within ten (10) days after completing the public notification requirements.
- 💧 A copy of the actual notice provided must be submitted with the completed and signed Certification.
- 💧 Systems may use the Consumer Confidence Report (CCR) as a method of delivery provided the timing, content, and delivery requirements are met.
- 💧 A PN Certification is still required when using the CCR.

# Public Notification Rule



## PN Rule Compliance Reminders and Tips:

### Tier 1 Violations:

- 💧 All Acute Risk Violations
  - Total Coliform MCL
    - E. coli
    - Fecal Coliforms
  - Nitrate MCL
  - Nitrite MCL
  - Chlorine Dioxide MRDL
  - Disease Outbreaks

# Public Notification Rule



## PN Rule Compliance Reminders and Tips:

### Tier 2 Violations:

- 💧 All other MCL Violations
- 💧 MRDL Violations
- 💧 Treatment Technique Violations
- 💧 Monitoring Violations for total coliform, nitrate, nitrite, total nitrate and nitrite, or chlorine dioxide
- 💧 Consent Order Violations

# Public Notification Rule



## PN Rule Compliance Reminders and Tips:

### Tier 3 Violations:

- 💧 All other Monitoring requirements
- 💧 Operated under an administrative order, variance, or an exemption;
- 💧 Exceeded the fluoride secondary maximum contaminant level (SMCL)

# Public Notification Rule



## PN Rule Compliance Reminders and Tips:

### Special Public Notice Requirements:

- 💧 Exceedance of the Copper Action Level (Tier 2)
- 💧 Notification when sodium level exceeds 28 mg/L (Tier 3)
- 💧 Notification of monitoring results for unregulated contaminants (Tier 3)

# Consumer Confidence Reports

- 💧 All community water systems, all sizes
- 💧 Annual report to provide educational materials to consumers regarding potential health risks associated with the quality, treatment and management of the public water supply
- 💧 Data collected during the previous calendar year
- 💧 Distribution due to consumers and the DWS by **July 1**
- 💧 All Reports must be available upon request
- 💧 Certification of distribution due to the DWS by **August 9**
- 💧 DWS recommends submitting the Certification with the CCR
- 💧 Forms and additional information available on the DWS Website
- 💧 Repeat offenders (i.e. CCR violations in consecutive years) will be targeted for Administrative Orders and Civil Penalties

# Stage 2 Disinfectant and Disinfection Byproducts Rule

## Stage 2 DBPR:

- 💧 Effective January 4, 2006.
- 💧 Applies to all CWS and NTNC that deliver water treated with a primary disinfectant (not UV).
- 💧 EPA is the lead agency until CT regulations are revised.
- 💧 Partnership Agreement identifies State and EPA roles and responsibilities.
  - EPA – System notification
  - EPA – Training Materials
  - EPA/CT – Technical Support
  - EPA/CT – Report Tracking
  - CT – Plan Review and Approval
  - CT – Certification and Waiver Approvals
  - EPA – Violation Enforcement
- 💧 Connecticut Regulations are currently being modified to include the Stage 2 DBPR

# Stage 2 Disinfectant and Disinfection Byproducts Rule

## Stage 2 Disinfectant and Disinfection Byproducts Rule

- 💧 Rule requires submittal of an Initial Distribution System Evaluation (IDSE).
- 💧 IDSE will be used to determine appropriate monitoring locations for Stage 2 compliance.
- 💧 CWS serving less than 500 may be eligible for a Very Small System Waiver (automatic).
- 💧 40/30 Certifications are available for systems in compliance with Stage 1 and where all results are less than half of the MCL for TTHM and HAA5.
- 💧 Maximum Contaminant Levels have not changed.
- 💧 Compliance will be based on a Location Running Annual Average (LRAA).
- 💧 Schedules, Fact Sheets, Forms and links to additional information and guidance documents are available on the DWS website.

# Stage 2 Disinfectant and Disinfection Byproducts Rule

## Stage 2 Disinfectant and Disinfection Byproducts Rule

IDSE Summary							
Sch	Systems Serving:	IDSE Due	# Due	SMP	SSS	40/30 Certifications	VSS Granted
1	≥ 100,000	10/1/2006	10	6	1	--	3
2	50,000–99,999	4/1/2007	17	8	--	1	8
3	10,000–49,999	10/1/2007	35	23	2	7	3
4	< 10,000 (CWS Only)	4/1/2008	138	1	--	9	13

Schedule for systems in a combined distribution system is based on that of the largest system in the combined distribution system.

**100% IDSE Compliance so far!**

Drinking Water Section

# Long Term 2 Enhance Surface Water Treatment Rule

## Long Term 2 Enhance Surface Water Treatment Rule

- ◆ Effective January 5, 2006.
- ◆ Applies to all public water systems that use surface water or ground water under the direct influence of surface water.
- ◆ EPA is the lead agency until CT regulations are revised.
- ◆ Partnership Agreement identifies State and EPA roles and responsibilities.
  - EPA – System notification
  - EPA – Training Materials
  - EPA/CT – Technical Support
  - EPA/CT – Report Tracking
  - CT – Report Review and Approval
  - EPA – Approval of results
  - CT – Treatment proposals and approvals
  - EPA – Violation Enforcement
- ◆ Connecticut Regulations are currently being modified to include the Stage 2 DBPR

# Long Term 2 Enhance Surface Water Treatment Rule

## Long Term 2 Enhance Surface Water Treatment Rule

- ◆ Rule initially requires systems to conduct two years of source water *Cryptosporidium* monitoring.
- ◆ Results of the monitoring will be used to determine if treatment upgrades are required.
- ◆ A second round of source water monitoring will be required starting in 2015.
- ◆ Systems may propose previously collected *Cryptosporidium* monitoring data for grandfathering.
- ◆ Source Water Monitoring Plans and Intent to Grandfather Forms are required three months prior to scheduled monitoring begin date.
- ◆ A list of EPA-Approved laboratories is available for contracting.
- ◆ Schedules, Fact Sheets, Forms and links to additional information and guidance documents are available on the DWS website.

# Long Term 2 Enhance Surface Water Treatment Rule

## Long Term 2 Enhance Surface Water Treatment Rule

Source Water Monitoring				
Sch.	Population Served	Source Monitoring Begin Date (First Round)	Sampling Schedule / Intent to Grandfather Due Date	Source Monitoring Begin Date (Second Round)
1	100,000 or more	10/1/2006	7/1/2006	4/1/2015
2	50,000 to 99,999	4/1/2007	1/1/2007	10/1/2015
3	10,000 to 49,999	4/1/2008	1/1/2008	10/1/2016
4	less than 10,000	10/1/2008	7/1/2008	10/1/2017

**100% Reporting Compliance so far!**

# Where we are going (The Future)

## Ground Water Rule

- 💧 Published in the Federal Register on November 8, 2006, Effective January 8, 2007.
- 💧 Applies to any public water system that use groundwater sources.
- 💧 Compliance date is December 1, 2009.
- 💧 Connecticut Regulations are currently being drafted

# Where we are going (The Future)

## Water Quality Monitoring Schedules

- ◆ Provided by the DWS as a courtesy to assist owners and operators of Public Water Systems in maintaining compliance
- ◆ Updated and posted on the website monthly
- ◆ Can be customized to suit the user's target water system list
- ◆ Standard reports are now available to quickly review compliance status of the target water system list
- ◆ Schedules divided into the following sections
  - Water Quality Monitoring Requirements
  - Facility Level Monitoring Requirements and Reporting History
  - Monthly Compliance Reminders
  - Sampling Point Inventory
  - Operator Certification
  - Public Notification Requirements
  - Contact Information
- ◆ Coming Soon - Public Notification Templates & Miscellaneous Compliance Requirements

# Where we are going (The Future)

- 🔥 Upgrade to DWS' Safe Drinking Water Information System (SDWIS)
  - 🔥 Designed to accommodate newly developed rules
  - 🔥 Will impact the manner in which results are reported to the DWS (EDI)
    - Change of file format (XML vs. text)
    - Electronic Reporting of Surface Water and Treatment Log Information
    - Tools will be available to run validation reports and convert text files to XML
  - 🔥 Web add-on that will make select information publicly available on the DWS website (i.e. monitoring requirements, sample results, violations, etc.)

# Where we are going (The Future)

- 💧 Additional compliance items to consider:
  - 💧 Monitoring and Reporting Violations do not go away if the results are reported.
    - EPA classifies and evaluates both monitoring and reporting violations the same way
  - 💧 Systems with more than one monitoring violation in a 12-month period will be referred to the DWS Enforcement Unit for further action
  - 💧 Systems with recurring chemical MCL violations may be asked to provide a compliance plan to return to compliance

# Additional Information

Connecticut Department of Public Health Website:  
<http://www.ct.gov/dph>

## Presenter Information:

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