



Drinking Water Enforcement

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Office of Environmental
Enforcement

Environmental Protection Agency

EPA 2020 Vision



- 2020 Vision
 - *Our surface water and groundwater will not be depleted and will be of excellent quality, meeting all national and international standards*
- Enforcement Plan
 - Improve safety and security of Drinking Water Supplies

Some Key points on Drinking Water Regulations



- Water supplier must supply water that is “wholesome and clean”
- Standards for 2 Microbiological, 26 Chemical and 20 Indicator parameters
- Meets the quality standards and is free from microorganisms or substances which constitute a potential danger to human health
- Focus is on human health and corrective action to be taken in the event of a non-compliance

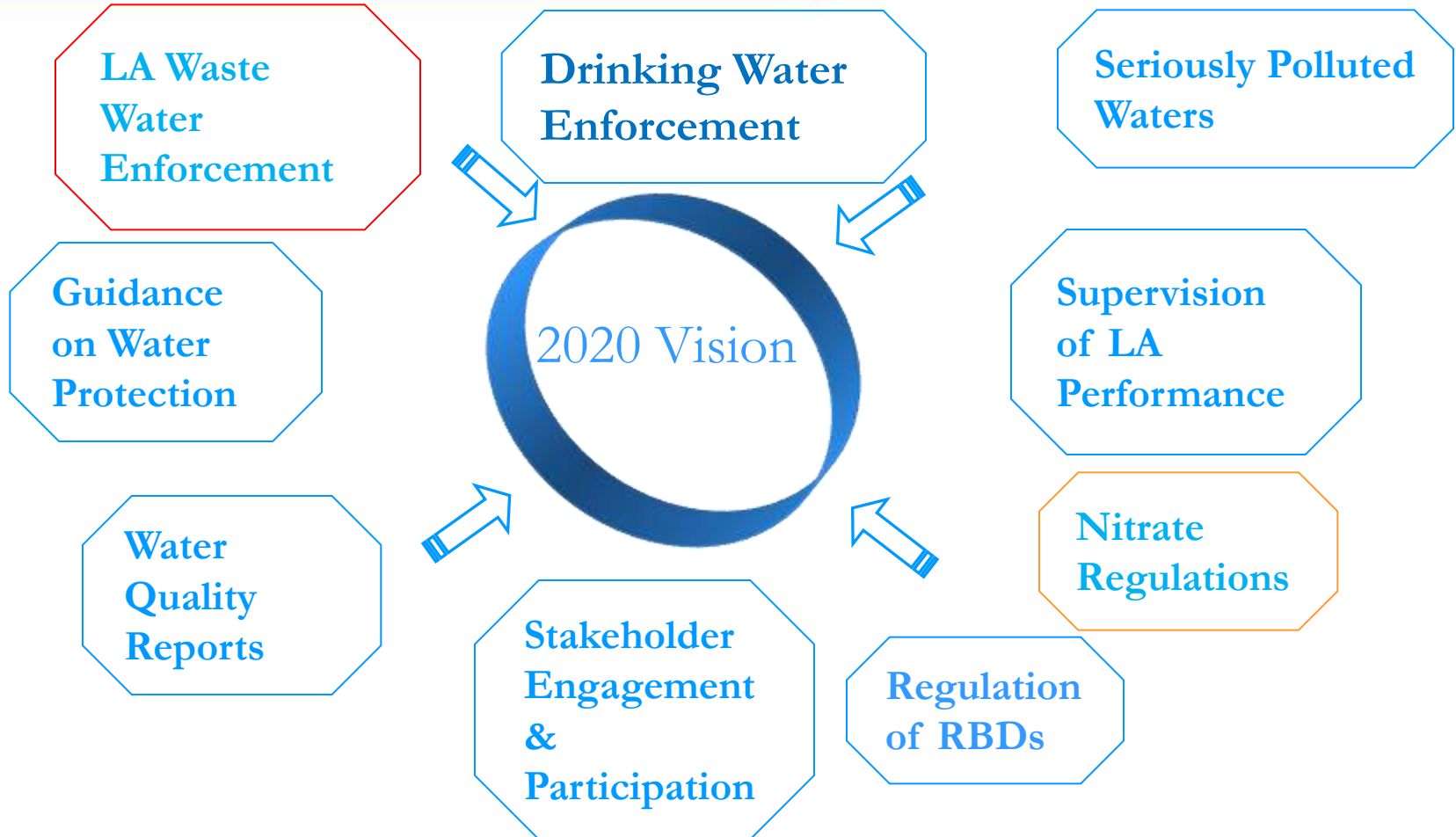
EPA Enforcement



- WSA must notify the EPA when health risk or breach of quality standard
- EPA to investigate and can issue direction to WSA if appropriate
- EPA can prosecute if WSA fails to comply with Direction



Water Enforcement Team



Luimnagh



Terryland



Tuam

Caherlistrane

Belclare

Headford

Corofin

Corrandulla

Lackagh

Maigh Cúilinn

Baile Chláir/
Claregalway

Athenry

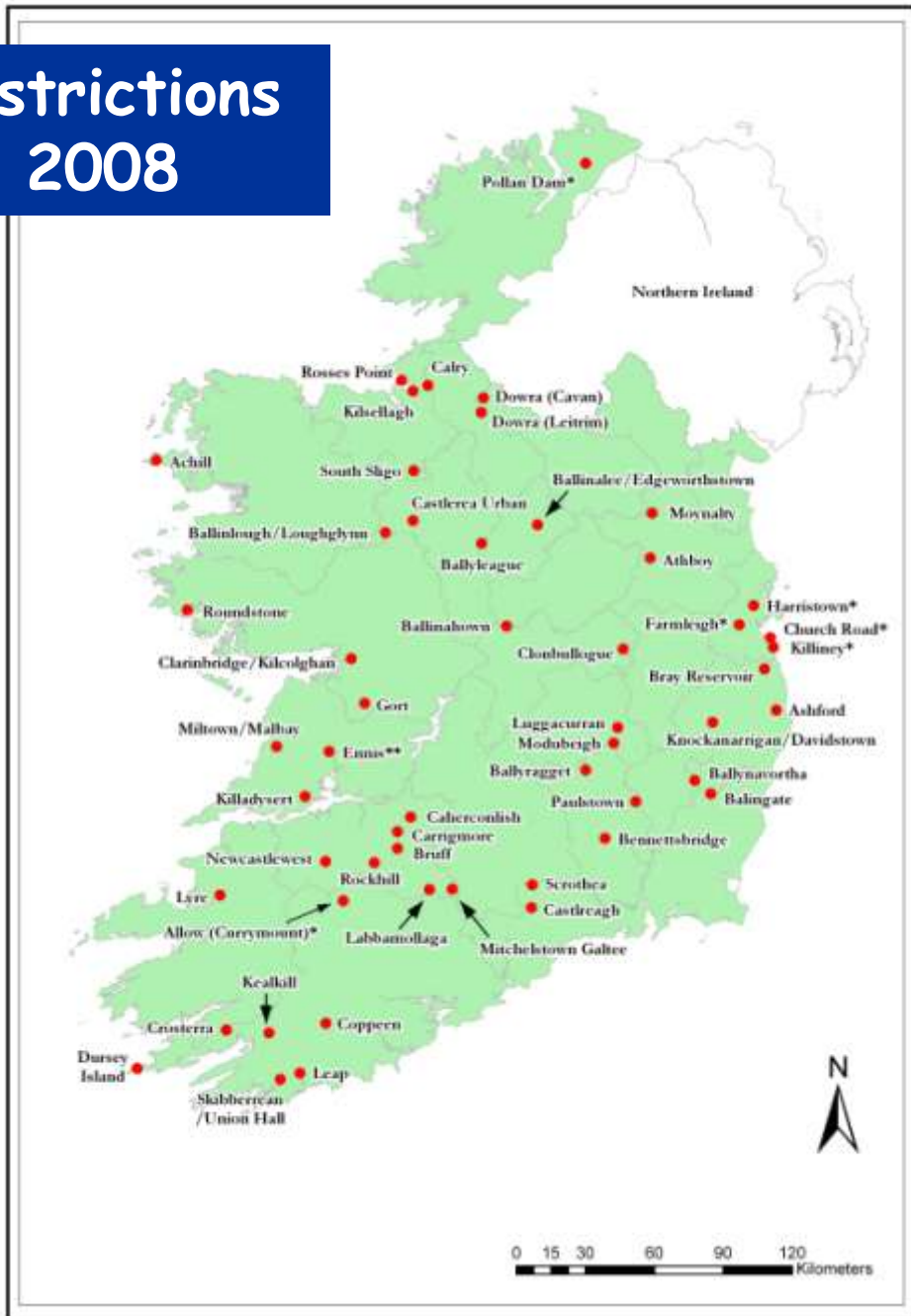
Galway City

Carn Mór

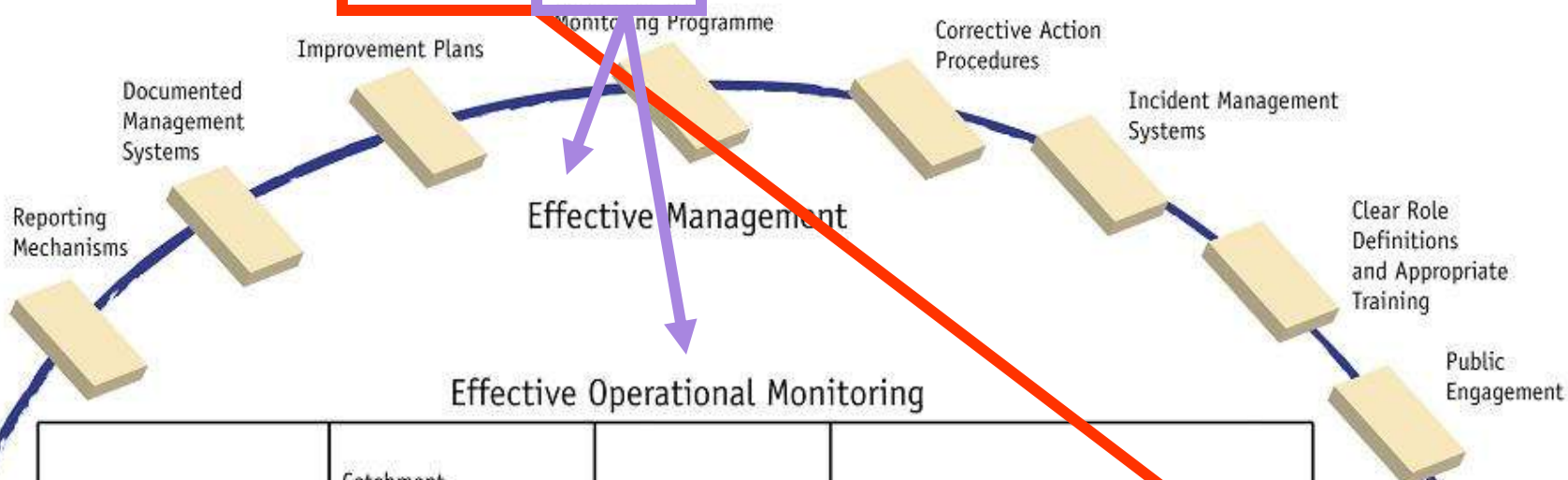
Oranmore

Clarenbridge

Boil water/restrictions Notices in 2008

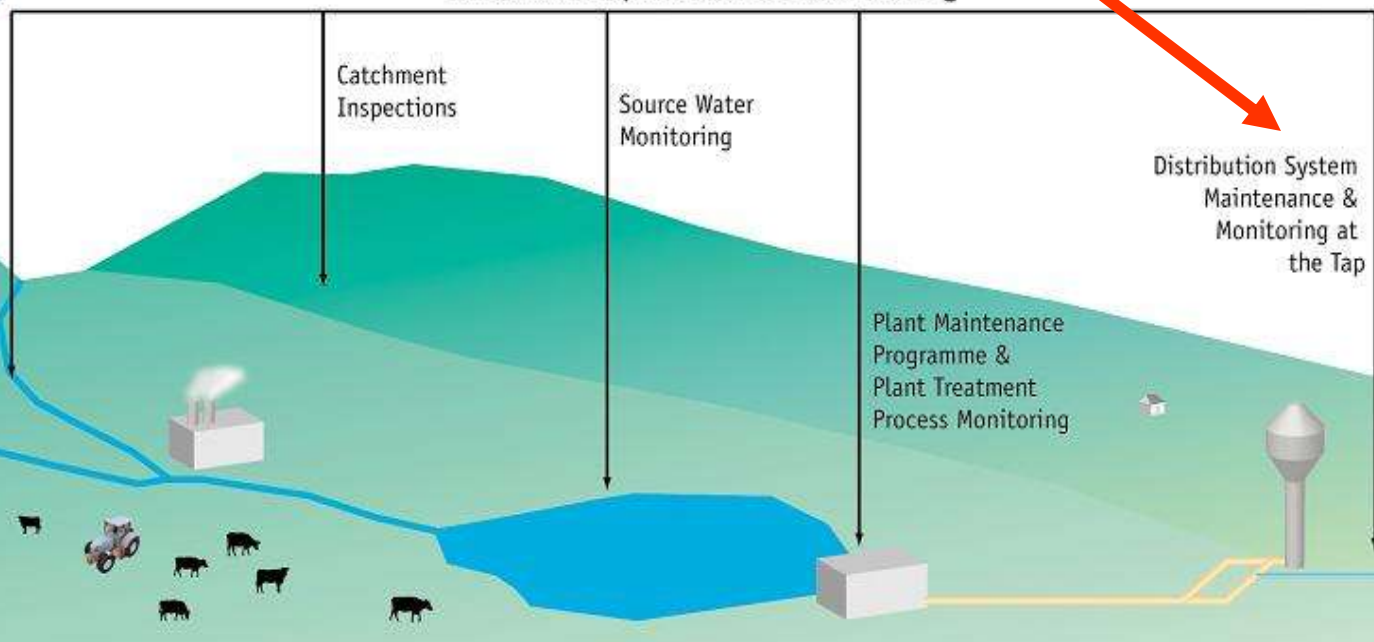


Safe & Secure Drinking Water

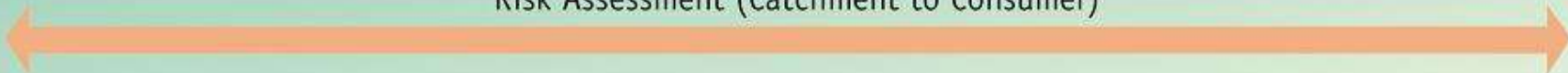


Effective Management

Effective Operational Monitoring



Risk Assessment (Catchment to Consumer)





Water Safety Plan Manual

Step-by-step risk management
for drinking-water suppliers



World Health
Organization



International
Water Association

World Health Organization Guidelines



- *“The most effective means of consistently ensuring the safety of a drinking water supply is through the use of a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer”.*
- *“In these Guidelines, such approaches are called **water safety plans**”.*
- Likely to be required when the Drinking Water Directive is revised.

Water Safety Plans



- A WSP applies to a specific water supply system
- Applicable to all types and sizes of water supply systems
- What is a **water supply system**?
 - source (catchment) – treatment – distribution (wsz) – consumer
 - include other separate elements eg raw water storage, service reservoirs, trunk mains

Water Safety Plan steps

Preparation

- 1 Assemble the WSP team

System assessment

- 2 Describe the water supply system
- 3 Identify hazards and hazardous events and assess the risks
- 4 Determine and validate control measures, reassess and prioritise the risks
- 5 Develop, implement and maintain an improvement programme
- 6 Define monitoring of the control measures (operational monitoring)
- 7 Verify the effectiveness of the WSP

Management and communication

- 8 Prepare management procedures
- 9 Develop supporting programmes

Feedback and improvement

- 10 Plan and carry out periodic review of the WSP
- 11 Revise the WSP following an incident

Example: Treatment



Coag/Floc/Clarification

- Contamination with unapproved treatment chemicals
- Floc carry over due to inappropriate dosing regime
- Floc carry over due to overloading of the plant

Filtration

- Contamination with unapproved treatment materials
- Inadequate particle removal due to blocked filters
- Inadequate particle removal due to inadequate filter media depth
- Inadequate particle removal due to inadequate backwashing regime
- Inadequate particle removal due to overloading of the plant

Disinfection

- Contamination with unapproved treatment chemicals
- Reliability
- By-Products
- Inadequate contact time

Other

- Any hazard not controlled in the catchment
- Loss of Power Supply
- Vandalism - loss of supply
- Instrumentation failure - Loss of control e.g set points for turbidity monitors
- Telemetry - Communication Failure
- Flooding - loss or restriction of treatment works
- Fire/Explosion - loss or restriction of treatment works
- Spill from unbunded chemical storage tank causing contamination

Covers Wider Issues



- WSP is not just about chemical and microbiological parameters
 - Sufficiency
 - Flooding
 - Power supplies
 - Training
 - Communications
 - Laboratory facilities
 - Etc.....

WSP Hazards & Risks



- Many hazards and potential hazards will be identified
- Many will be low risk and not require further action other than keeping under review
- Important to document the risk assessment methodology and outcome to justify the result and ensure a consistent approach

WSP Improvement Programmes



- Improvement programmes
- Needed for significant risks where there is no current control or where the current control is not fully effective or reliable
 - Realistic and achievable
 - Short, medium, long term
 - Prioritised
 - Need owner
 - Need dates, progress chasing

Regulation 17 of DW Regulations

- Each supervisory authority must audit water suppliers.
- Frequency and content shall be as advised by the Agency
- Agency may issue guidelines on frequency and content.
- Frequency of auditing should be based on risk criteria but should also include provision for unscheduled audits
- EPA audits will be based on notifications received and scheduled audits

Areas covered in Audits



- Source Protection.
- Chemical Dosing.
- Sedimentation.
- Filtration.
- Disinfection.
- Chemical Storage & Bunding
- Clearwater Tanks & Reservoirs
- Security
- Housekeeping & Hygiene
- Investigations into exceedances
- Implementation of Remedial Action Programmes

EPA Enforcement to Date



- Chlorine alarms not installed
- Insufficient chlorine in treated water/Chlorine booster stations needed.
- Actions must deal with root cause of problem and not “patch job”
- Plants run above design capacity
- Tighter control needed over chemicals used
- Inadequate monitors/Inadequate alarms
- Poor maintenance of reservoirs or distribution networks
- High turbidity in treated water
- Remedial Action List

Source Protection

- Routine monitoring of the raw water should take place.
- *E. Coli* should be included.
- The source & intake should be characterised.
- Surveys should be conducted on high risk Agricultural and Septic Tank sources in catchment.
- Trends in raw water quality should be conducted to determine the optimum treatment conditions.
- Good Agricultural Practices Regulations.



Cattle Access

- Source fenced off to restrict livestock access.
- Assess Good Agricultural Practices Regulations (e.g. Organic fertiliser not applied 200m Abstraction Point)
- Link work by Environment staff on Water Framework Directive with DW source protection.



Duty/Standby Dosing Points



Treatment Chemical Dosing Pumps

- Duty and Standby for Chlorine dosing.
- For Alum - appropriate dosing location – sufficient turbulence and CT.
- Alum added 1st then poly, 2-10 mins later.
- Ideally all injection ports should be visible.



Floc Carry Over



Management of Filters

- Minimum design depth for media
- Flow rates must not be excessive
- Appropriate control over backwashing of filters
- Turbidity monitors after each filter
- First run of water through filters run to waste
- Media examination for problems (e.g. cracks, boils, poor backwash arrangements)

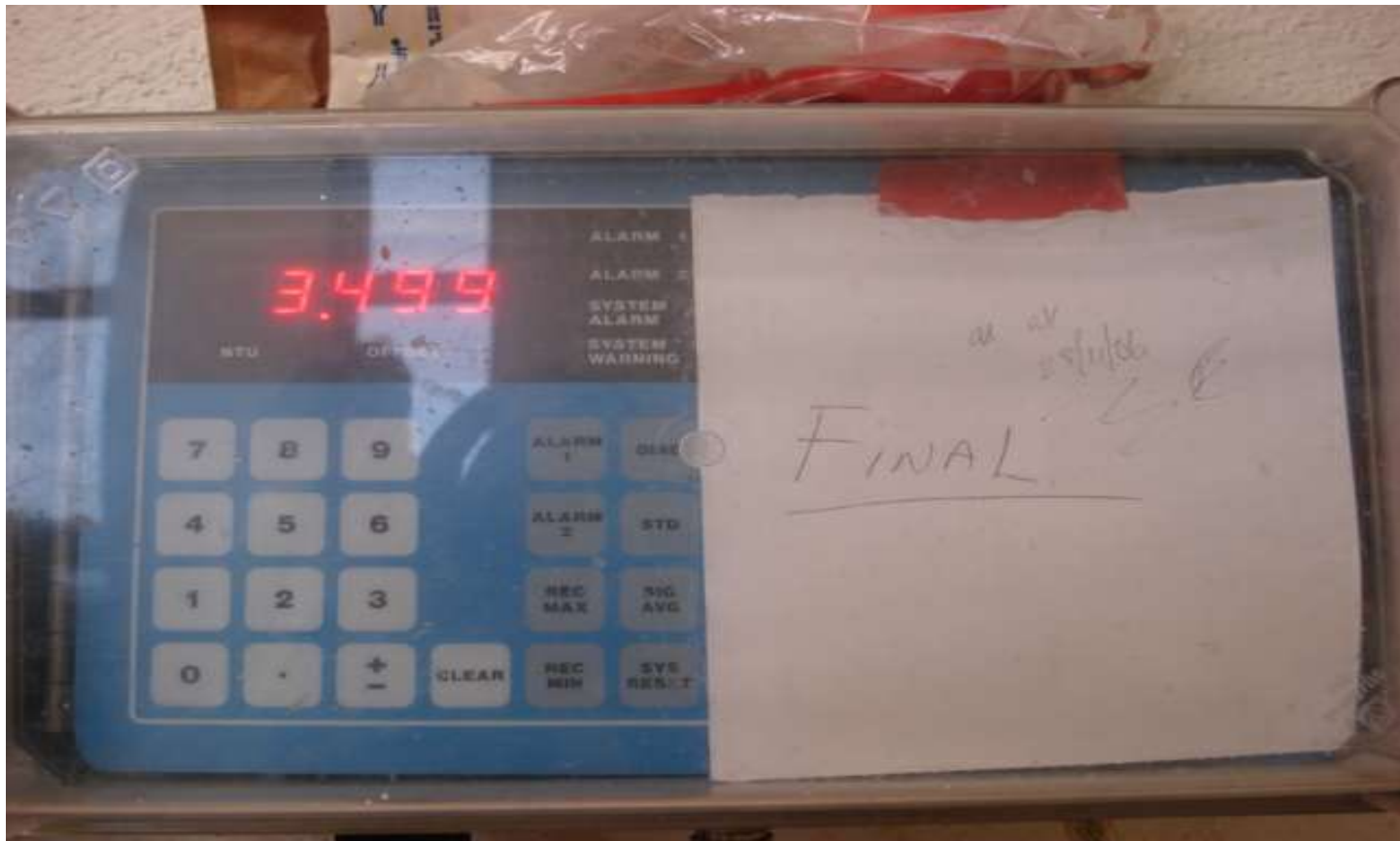
EPA Water Treatment Manual: Filtration



Washing of Filters



Turbidity Meter on final treated water



Chlorine Monitor Project



- Units will continuously monitor and store chlorine residual levels.
- Will send a text message alarm to a designated person if the residual drops below the set point.
- Will have on site graphical display and the facility to download stored data to a PC off site.
- In Aug 2008 40% of supplies had monitors and alarms, this is now up to 95%.

Chlorine Alarms & Response



Chlorination Point Security



Clearwater Tanks



Reservoirs



Bunding & Chemicals



- Review chemical storage arrangements at treatment plants.
- Chemicals must be stored in banded areas.
- Fill points should be located within the banded area.
- ALL Chemicals on are IS:EN or BS:EN std or on DWI List.



<http://www.epa.ie/downloads/advice/general/name,14606,en.html>

Plant Security



On-Site Monitoring

- Residual Chlorine
- pH

- Laboratory Monitoring
 - Microbiological
 - Chemical
 - Indicator



EPA Guidance



- Water Treatment Manuals
 - Disinfection (under review)
 - Filtration
 - Coagulation, Flocculation and Clarification
- European Communities (Drinking Water) Regulations, 2000: A Handbook on Implementation for Sanitary Authorities



EPA Guidance Booklets



Booklet No 1. Guidance for Local Authorities on Regulation 9 and Regulation 10 of the European Communities (Drinking Water) (No. 2) Regulations 2007 (SI No. 278 of 2007).

Booklet No 2. Annual reporting of drinking water monitoring results.

Booklet No 3. Guidance for local authorities on the development of a remedial action list for public water supplies.

Booklet No 4. Risk screening methodology for *Cryptosporidium*.

Booklet No 5. Exempted drinking water supplies (draft for consultation).

EPA Advice Notes



Advice Note No 1. Lead Compliance Monitoring and Survey.

Advice Note No.2. Action programmes to restore the quality of drinking water impacted by lead pipes and lead plumbing.

Advice Note No. 3. *E.coli* in Drinking Water.

Advice Note No 4. Disinfection By-Products in Drinking Water .

Advice Note No. 5. Turbidity in Drinking Water.





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Enforcement Network Extranet

This extranet site was developed to provide a central, secure location for relevant personnel to share information, procedures and guidance on environmental enforcement activities. Please note that access to the site is restricted to public sector staff involved in the regulation and enforcement of environmental protection legislation.

The key objective of the Environmental Enforcement Network is to foster co-operation between the various public service bodies involved in the enforcement of environmental legislation, so that a higher and more consistent standard of enforcement is achieved throughout the country.

In pursuit of this objective, the functions of the Network are to:

- Ensure more effective co-ordination in the implementation of environmental enforcement activities;
- Provide a framework for a co-ordinated approach to special investigations/actions;
- Develop a consistent approach to the enforcement of environmental legislation;
- Promote the exchange of information and experience in the application and enforcement of environmental legislation;
- Provide assistance to local authorities and other relevant agencies in the development of best practice; and
- Provide a mechanism for feedback to policy makers and legislators on the practical implementation of policies and regulations.

The Network has produced two Newsletters to date in relation to its activities. A copy of these Newsletter can be accessed/downloaded below.

