Framework for Action for the management of small drinking water supplies
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Small drinking water supplies: a “Framework for action” to improve management
## Contents

**Foreword**  
5

**Background**  
6

**Essential features of a system of risk based management of the safety of water supplies**  
8

(a) Duty to keep and maintain a register of water supplies  
8

(b) Duty to record certain information in the register  
11

(c) Duty to risk assess  
14

(d) Reporting  
17
Foreword

Safe drinking water is essential to our daily lives, and vital for public health. Most EU citizens are fortunate enough to take high quality tap water for granted, with no risk to their health.

That is thanks in part to EU drinking water policy, which has been in force since the mid-seventies, and has proved an important driver to ensure high drinking water quality across the EU. The combined efforts of EU institutions, Member States, water service providers and the water industry sector have resulted in high compliance with EU drinking water quality standards all around the Union.

Some 65 million EU citizens rely on small drinking water supplies, predominantly in rural and remote areas. Managing these supplies often requires a specific small-scale approach that differs markedly from the industrial system applied in densely populated areas. The resource constraints are real, and sharing best practices is not always easy. The latest data shows that there is room for improvement, with standards are not always met in small water supply zones.

The ‘Framework for Action’ guidance document that follows was put together by the Commission and the Member States, and it sets out the main principles for successful management of small-scale water supply systems, on the basis of best practices that should be shared more widely. The guidance also takes into account World Health Organisation guidance on risk-based management and water safety plans.

Drinking water is an area where the Commission is looking to the future. ‘Right2Water’, the first successful European Citizens’ Initiative, underlined the importance EU citizens attach to high quality drinking water services. The Commission noted the concern with respect to small drinking water supplies, and is committed to assessing the need for improvements to EU drinking water policy.

The 7th Environmental Action Programme states that by 2020 all EU citizens should benefit from high standards for safe drinking water, and in the summer of 2014, the Commission launched an EU-wide consultation on the matter. The results will feed into the on-going process of reflection as regards future policy in this area.

I trust that this ‘Framework for Action’ will prove useful for small water service providers and competent authorities, and that it will serve as an important tool to further improve the management of small drinking water supplies.

Karl Falkenberg
Director-General DG Environment
The provision of safe and secure drinking water from small\textsuperscript{1} water supplies is a complex and resource-intensive challenge. The principles outlined in this document set out a path towards improving the quality of these small supplies. Member States should strive to implement the principles in a stepwise manner having first reviewed their existing legal framework to identify the adaptations required, setting realistic timescales for implementing new or improved arrangements.

**Background**

The Drinking Water Directive\textsuperscript{2} establishes obligations for Member States to comply with a set of microbiological, chemical and indicator parametric values (article 5), to monitor the quality of all water supplies falling within its scope, to make adequate and up-to-date information on the quality of drinking water available to consumers (articles 7 and 13) and to publish reports about the quality of drinking water. Generally there is a good level of compliance with parametric values for large water supplies (more than the threshold of 1000 m\textsuperscript{3} per day or serving more than 5000 persons). However the Directive also sets out provisions for small supplies below this threshold. In January 2009, as the compliance situation for these supplies was unknown at EU level, the European Commission requested small supply monitoring data from Member States to enable the Commission to form a view on the level of compliance of small water supplies in the broader context of consultations taking place at that time about a possible revision of the Directive. This data collected showed that there was relatively little monitoring data available for small supplies and where data existed, it was incomplete. Overall, the level of compliance of small supplies was of concern and appeared to be around 60% for microbiological parameters.

In early 2011, the Commission decided to develop a policy paper to help close the compliance gap between large and small water supplies recognizing that all citizens should receive a safe and wholesome supply of water. Any difference in compliance between the large and small water supplies could give rise to variations in health between people living in different parts of the EU and between socially advantaged and disadvantaged EU citizens. The EU is committed to solidarity, social and economic cohesion, human rights and equality of opportunity. As a consequence, it has listed in its Communication COM (209)567 Solidarity in Health: Reducing health inequalities in the EU\textsuperscript{3} a number of current EU relevant policies and identified a number of actions intended to lay the framework for sustained action for tackling health inequalities. This document should be considered as a contribution to the Commission’s and Member States active work towards reducing health inequalities.

\textsuperscript{1} Small water supplies refer to those providing less than 1,000 cubic meters daily or less than 5,000 people.

\textsuperscript{2} Directive 98/83/EC

\textsuperscript{3} http://ec.europa.eu/health/determinants/socio_economics/documents/com2009_en.pdf
In all 27 Member States, there is national legislation in place to secure compliance with the Drinking Water Directive\(^4\). This legislation assigns responsibilities to national, regional or local institutions for the monitoring of water supplies. However, the Directive is not only about the sampling, analysis and reporting of the results of water samples, it also requires action to be taken to identify, investigate and mitigate risks and to inform consumers. In order to improve the quality and safety of small supplies, it is the way that these other aspects of the Directive are implemented that are crucially important and the lack of focus on these is the main cause of the high level of non-compliance of small supplies. Therefore, in this paper, specific attention is drawn to the risk-based decision-making inherent in the requirements set out in the following Articles of the Drinking Water Drinking Water Directive:

Article 3 (3) – small supply exemption from monitoring is not an exemption from duty on MS to take action when a potential danger to human health is apparent.

Article 7 (6) – duty on MS to monitor for additional substances/organisms based on assessment of potential danger to human health.

Article 8 (3) (6) – duty on MS to take action if potential danger to human health exists even whether or not there is a failure of a parameter or indicator.

Article 9 (1) – MS cannot authorize a derogation if there is a potential danger to human health.

Article 13 – MS must publish adequate and up to date information for consumers including details of supplies that pose a potential danger to human health.

Annex 1 Table C Note 2 – MS must investigate a failure of clostridia parameter to establish if there is a potential danger to human health.

This document identifies the key features of the arrangements that some Member States have put in place that enable the introduction of a risk-based approach towards achieving small supply compliance with the Drinking Water Directive. The paper describes the practical steps that have been found to be necessary in order to enable effective decision making and to incentivize action to improve supplies and inform consumers.

\(^4\) Directive 98/83/EC
Essential features of a system of risk based management of the safety of water supplies

Four key components of a risk based approach have been identified as needing to be formalized through legislation to enable a risk-based approach to small water supplies to be successfully introduced. Each of these is defined and explained below using practical examples from Member States.

(a) Duty to keep and maintain a register of water supplies.

Nothing can be done to comply with the EU Drinking Water Directive unless the Member State knows the location, type and ownership of every water supply regardless of size. Since the Directive’s aim is to protect human health against water-related risks, it is logical that any register of small water supplies is available to those who are responsible for public health protection at the local level in relation to all environmental risks (air, soil, water food). Legislation is needed therefore to make it a duty for the appropriate local supervisory or regulatory authorities to maintain a register of all small supplies in their geographical area. In addition this same information needs to be provided to and collated centrally by the appropriate national regulator/coordinator (acting for the relevant ministry responsible for national reporting on the quality of water supplies). Depending on the general law in the particular Member State, it may be necessary also to put into law a specific duty on owners of small supplies to obligate them either to provide information, or to register the supply, or to obtain a license, whichever is appropriate.

Case Study: England and Wales

In England and Wales water supplies are divided into two types: those operated by a company under a license (public supplies) and other unlicensed supplies (private supplies). Public suppliers must apply for and be granted a license and through regulations must provide information about each public supply, regardless of its size, to the national regulator. Private supplies are mostly small supplies in the meaning of the Directive. They range from a private household supply through to a supply shared by several householders, an estate or village but they may also include a supply for commercial purposes or to a public building or food premises, making them a large supply in the meaning of the Directive. Regulations make it a duty on each local authority to maintain a register of all private supplies and to periodically send the information to the national regulator. Local authorities are local government organisations responsible for environmental health in a defined geographical area. Most local authorities did not send information about private supplies to the national regulator until the regulations were changed to make it an annual mandatory duty. This change enabled the national regulator to issue guidance and publish an annual report. This improved transparency and served as an incentive for action by local authorities when it became known that their registers were not complete or accurate or not being made available.
Case Study: Finland

In Finland, before starting operation, all water suppliers have to be accepted by the competent local authority, which is the municipal health authority. This situation applies to all water suppliers, whether small or large, public or private, and the only exception is a private householder who has a private well serving just one dwelling. It is not permitted to supply water for the first time without acceptance by the municipal health authority and a new acceptance must be applied for when any change in water source or treatment is made. Through this acceptance requirement, municipal health authorities are able to create a register of water supplies in their geographical area and from 2013 onwards, the information in these municipal registers will be available on a national electronic database.

Case Study: Ireland

In Ireland, many public supplies are small supplies, as defined by the Directive, likewise, some private supplies meet the Directive definition of a large supply. For this reason, the legislation requires the supervisory authorities to maintain a register of all supplies in their geographical area of responsibility and to provide this data to the national authority.

Case Study: Spain

In Spain, registration is compulsory for supplies serving more than 50 people but less than 5,000 and for all supplies regardless of size providing water as part of a commercial or public activity. It is mandatory for all those who are involved with these water supplies (water supply managers, laboratories, local and regional authorities, ministry of health) to register water supply information on a national health information system (SINAC). However for small supplies, it is only advisory for information to be registered therefore, at the current time, not all water supplies are registered.
Case Study: Italy

In Italy, it is law for regional authorities to keep a register of all water supplies. Water suppliers are required to provide local and regional authorities with information about all water supplies. Regional authorities are required to collect and keep this information up-to-date and to make the information available nationally (ministry of health). However, the registration of small water supplies has proved problematic because regional law takes precedence over national law with the outcome that regional authorities do not send data about small supplies to the ministry of health.

Case Study: Belgium

In Belgium there are three supervisory regional authorities and each is required to keep a register of water supplies. In one region all supplies are large public supplies. In the other two regions there are small and large, public and private supplies. Initially in one of these regions (Wallonia) it was not mandatory for small private supplies to be registered, therefore, the regional authority had no means to impose it. Consequently details of only a very few (5) small supplies were recorded. Subsequently an initiative was undertaken to reinforce the need for registration and the situation was changed to assign one inspector full time to be responsible for collecting information about all private supplies. Three years after making this change, the region now has records for many more small private supplies (120). In the Flemish region, all water suppliers have the obligation to report and thus to register to the competent authorities as soon as they produce water for human consumption purposes. The private suppliers however often do not comply with this obligation. Recently, the competent authorities have started enforcement action towards the private suppliers who use the water for public of commercial purposes to compel them to report and register details of the supplies.
(b) Duty to record certain information in the register.

Experience has shown that it is not sufficient just to set out the duty to keep and maintain a register. It is equally important to make it clear what information should be collected and recorded about each supply. As the actions required under the Directive differ according to the characteristics of a water supply (e.g. size, population, source, use of water), experience has shown that a common core of information needs to be set out in the legislation, together with a requirement for this information to be updated, whenever it changes.

The gathering of information for a register of small supplies should be coordinated at national level but it will require significant local input to ensure it is comprehensive and accurate. The purpose of the national coordinator will be to set out and standardize the key pieces of information that need to be gathered for the register. In most cases the legislation will specify the minimum information requirements with the benefits of gathering additional information being emphasized in guidance provided by the national coordinator. The national co-coordinator should identify the different categories of supply e.g. community run schemes, seasonal supplies (e.g. campsites) and those used for commercial purposes or for food preparation or manufacture. Food premises are regulated under existing food legislation therefore the national coordinator should liaise with the competent food authority to establish what information is already available.

Inputting of local information to the national register is a critical process and the national coordinator should liaise with local and regional authorities and environmental health officers to ensure the register is complete and accurate. To help with the process, the need for a legal requirement for operators of small supplies to register should be considered, however, this is not likely to be successful unless it is accompanied by a supportive awareness raising campaign promoting the benefits. Such initiatives should involve local community groups, special interest groups and industry representative groups, as appropriate to the situation. It can be useful to prioritize campaigns initially towards high risk supplies (e.g. where food premises are already regulated, target community run schemes with public buildings such as schools and leisure facilities). Once the list has been established it should be maintained and managed locally but the information should be fed to the national coordinator on a regular (e.g. annual) basis to keep it up to date.
Case Study: England and Wales

The minimum small supply information to be recorded in the register is set out in Regulations that implement the Directive for private supplies. The information required when the register is first set up is as follows:

- name of supply with unique identifier
- type of source
- geographical location with grid reference
- estimate of number of people supplied
- estimate of average daily volume of water supplied
- type of premises supplied
- details of any treatment process
- duty to review the above information annually
- duty to keep the record for 30 years

Additional records are required to go on the register within one month of such information being collected, as follows:

- Plan and description of supply
- Monitoring program
- Risk assessment
- Results of samples
- Results of any investigation of a failure
- Any derogation
- Any notice served
- Any action agreed
- Any advice given
- Duty to keep records of sampling and risk assessment for 30 years
- Duty to keep all other information for 5 years

Case Study: Finland

The minimum information to be included in an application by a water supplier (public or private, large or small) for acceptance by the competent authority is as follows:

- Name and contact details of the supplier
- Location of the supply and its source
- Annual volume of water used and number of consumers served
- Description of raw water, water treatment and operational monitoring Description of quality of treated water and the chemicals used
- Description of monitoring programme
- Details of the manager in charge of the supply
- Description of emergency plan and alternate supply arrangements
- Any other information relevant to suitability of the supply for human consumption

Case Study: Ireland

The minimum information to be recorded in the register is as follows:

- Name and address of supplier
- Volume of water supplied expressed in cubic metres or a population equivalent
- The type of water treatment in place
- The source of the water supply
- The supply zone code allocated under the national monitoring program
Case Study: Spain
The national electronic system (SINAC) is a web application accessed via the internet. Its design is focused on the water management process. There is a central national administrator and two types of user access: one for professionals (water suppliers, laboratories, regional and local authorities) and one for the public. Users are authorized to have access to different levels of information (local, regional, national). All information about the supplies is geo-referenced. It is mandatory to provide the system with updated data. The data held in the system is as follows:
- Supply Zones
- Infrastructure, including catchment, treatment, storage, distribution network, tankers
- Official laboratories
- Analytical results
- Non-compliant results
- Sanitary inspections
- Derogations
- Name of suppliers

Case Study: Italy
The register of water supplies contains the following information:
- Documentary evidence of right to use the raw water source
- Plan of water source
- Infrastructure including catchment, treatment, storage, distribution network
- Technical report on the supply characteristics and history of construction
- Amount of water used and number of users served
(c) Duty to risk assess

The characteristics of each water supply are unique therefore all decisions regarding the safety and quality of a water supply will only be made correctly when they are informed by an understanding of the characteristics of each particular supply. Experience has shown that the absence of such knowledge is a barrier to effective decision making and reporting. Experience has also shown that this impediment can be overcome by introducing a specific duty for every water supply, regardless of its size, to be risk assessed.

In deciding on whom to place the duty to risk assess a water supply, the matter of competence has to be considered because it is a technical task. The water supplier must always be involved. For water supplies that are under the control of a company or organization that is licensed or accredited, a mechanism of assurance of competence exists, therefore the water supplier should be obliged to risk assess and report the outcome, and any risk mitigation measures, to the supervisory authority and national regulator. However, for many small supplies this mechanism of assurance is absent because the supply is the responsibility of a householder, land owner or a collective where there is no professional management. For these reasons, the duty to risk assess small supplies may need to be assigned to local environmental or public health officers, recognizing that they will need to carry out the task jointly with the water supply owner. The process of risk assessing for the first time will give the water supply owner the necessary skills and knowledge to take on the task of maintaining the risk assessment going forward. This delegation of the task should be recognized as permissible in principle, but permitted only on the grounds of observed competence or training.

In addition to formally assigning responsibility for the task of risk assessing a supply, there also needs to be an agreed methodology for recording the risk assessment and reporting the outcomes. This is normally the responsibility of the national coordinator and will usually take the form of a national guidance document, an electronic tool or a technical standard. It is recommended that the method guidance should be based on the WHO Drinking Water Guidelines (water safety plan approach principles) but adapted for the purpose of delivering EU Directive requirements of decision making and reporting. Such guidance will also support and enable the development of quality assurance schemes and will highlight and draw on other guidelines and controls prepared and published by industry and other national or local stakeholders. For example, Member States should consider guidance on environmental measures and advice about the protection of groundwater or surface water quality under the Water Framework Directive.

A key motivation for implementing a mandatory requirement to risk assess every water supply is the benefits it will bring to both water suppliers and supervisory authorities through enabling an evidence-based reduction in monitoring for those parameters that are not relevant to a given water supply. Redirecting resources away from unnecessary and technically inappropriate monitoring, and focusing these resources instead on risk assessment, has the added benefit of providing a mechanism for raising the awareness of small supply owners and users about what is needed in practical terms to ensure a small supply is safe at all times. There is widespread ignorance amongst citizens about the role of compliance monitoring, which is not a preventative activity nor does it make a water supply safe or secure. Risk assessment however is both preventative and protective; it will identify the specific hazards and hazardous events relevant to a particular supply and identify the existing practical controls in place, or needed, to mitigate risk. It also enables full use to be made of the many parameter exemptions or reduced frequencies in Annex II of the Directive, keeping monitoring costs to a minimum and providing alternative risk-based information to demonstrate and verify compliance with the Directive requirements regarding taking of action to improve supplies and to inform consumers.
Case Study: England and Wales
Regulations put a duty on water suppliers that are licensed (public supplies) to carry out a risk assessment and to report the outcomes to the national regulator. The risk assessment has to be acted upon and kept under continuous review with updates whenever circumstances change. The national drinking water regulator has provided guidance in the form of a template for reporting the outcomes of the risk assessment and has powers to require additional action to be taken to mitigate an identified risk, or to improve methodology, providing independent assurance of the risk assessment process. For private supplies, regulations make local authorities responsible for carrying out a risk assessment of each private supply once every five years. For single domestic household supplies, the regulations put a duty on the local authority to risk assess the supply only when requested to do so by the owner or a user. When carrying out the risk assessment environmental health officers will visit the supply and discuss its characteristics and management with the relevant persons. Environmental health officers follow national guidance provided by the national drinking water regulator. This guidance is in the form of an electronic Excel-based tool that prompts questions, captures the answers and information about the supply, and automatically generates a risk score and an action plan. The local authority has the power to require action to be taken if the risk assessment identifies a risk to health requiring consumers to be notified under the Directive. National guidance for small supplies allows for reduced monitoring on the basis of risk in accordance with Annex II of the Directive for a range of parameters.

Case Study: Ireland
For a water supplier to receive funding for improving a supply, they must sign up to a Quality Assurance System based on HACCP (a recognized form of risk assessment used in the food industry). It is recognized that this is not as comprehensive as the WHO water safety plan approach, but it has proved useful and valuable as a first step towards the introduction of risk assessment of supplies.

Case Study: Germany
A joint working group of all sixteen federal states and authorities meets annually and is mandated to review all current surveillance evidence with regard to the quality and safety of small supplies. The working group has produced an advisory booklet addressed to private well owners. This is set out in easy to understand language and explains the householder's duties and highlights the benefits of the regular controls they should carry out and describes the surveillance duties of the authorities. Typical hazards are described, along with a template for identifying these through sanitary inspections. It also sets out options for repair, control and monitoring. It is recognized that this is not as comprehensive as the WHO water safety plan approach but it has proved useful and valuable as a first step towards the introduction of risk assessment.
Case Study: Spain

Water suppliers are required to prepare a Self Control and Supply Management Protocol. These protocols are intended to set out in detail how national law is applied. This requirement has been supported by a national review and recommendations for action following the investigation of 24 incidents affecting the quality of drinking water. The recommendations identify the cause of each incident, how it was identified and controlled and the information that was provided to consumers. It is recognized that this is not as comprehensive as the WHO water safety plan approach but it has proved useful and valuable as a first step towards sharing knowledge about risk.
(d) Reporting

In all Member States there is legislation transposing the Directive that puts a duty on those authorities responsible for carrying out compliance monitoring to report the results at least annually to the national regulator/coordinator. However if this reporting relates only to compliance monitoring zones (large supplies) then it is not possible for the Member State to show that small supplies are wholesome and safe, as required by the Directive. The lack of national reporting and transparency about small supplies is a key barrier to implementing the Directive. It is essential therefore for a formal duty for national reporting on all supplies, small and large, to be put into place.

Case Study: England and Wales

Regulations require licensed water companies (public supplies) and local authorities (private supplies) not only to keep records, but to send these records to the national regulator. The national regulator is under a duty to review the information and ensure appropriate action has been taken at local level, if required, and to publish an annual report on the quality and safety of all supplies. The regulator also reports this information on behalf of the government to the European Commission. The arrangements for reporting are set out by the regulator in formal guidance and the regulator provides an electronic reporting template. All licensed water companies are required to give all consumers information about the quality of drinking water on request, either in writing or on the internet.
Case Study: Ireland
There is a legal duty for all supervisory authorities to send monitoring information for public and private water supplies to the national regulator each year. The national regulator assesses the results and publishes an annual report on the quality of drinking water supplies. On the basis of this reporting, the national regulator has been able to implement a strategic plan to improve private water supplies prioritizing those of poorest qualities. Each local authority is also required to make drinking water quality information available to the public on the internet.

Case Study: Finland
The municipal health authority receives all monitoring results and checks these to ensure that the water supplier has taken all the required action laid down in the Directive to investigate and address adverse results and inform consumers. In the near future, the data from both large and small supplies will be available on a national database.

Case Study: Spain
Monitoring data notification to the national system (SINAC) is compulsory for supplies serving more than 50 people but not for small supplies serving less than 50 people. Therefore whilst every regional authority is required to periodically to publish a drinking water quality report for its geographical area, and the ministry of health is required to publish an annual report, these reports are not complete or accurate because they are based on SINAC.

Case Study: Belgium
All the suppliers have a legal obligation to send their compliance monitoring results each year to the regional authorities who then check the quality and publish regional reports.

For public suppliers there is a strictly defined national reporting protocol with a regionally defined worksheet and electronic transfer system in place. However, there is little data available nationally about private small supplies because the requirement to report using the worksheet system is voluntary, not mandatory. Some private suppliers have adopted the worksheet and electronic transfer system but for most of these supplies, the results are sent on paper reports from laboratories.

The competent authorities have recently initiated enforcement action in order to get private suppliers who provide water for public or commercial purposes to report on their compliance monitoring.