

**Targets set by the Federal Republic of Germany
under the Protocol on Water and Health to the Convention on the Protection and Use of
Transboundary Watercourses and International Lakes, signed in London on
17 June 1999**

The main objective of the Protocol on Water and Health is to prevent, control and reduce water-related diseases in Europe. The Protocol contributes to the advancement of drinking water supply and waste water disposal.

The Protocol requires the Parties to establish and publish national targets in order to achieve a high level of protection from water-related disease. The areas listed in Article 6, paragraph (2) of the Protocol provide the basis for the setting of national targets.

As a Party to the Protocol, Germany is required to set such targets within two years of becoming a Party.

Germany signed the Protocol on 17 June 1999, and ratified it on 15 January 2007.

Below, the national targets, target dates and measures to be taken in order to meet the targets are outlined:

Article 6 of the Protocol

Targets and target dates

1. In order to achieve the objective of this Protocol, the Parties shall pursue the aims of:

a) Access to drinking water for everyone

b) Provision of sanitation for everyone

within a framework of integrated water-management systems aimed at sustainable use of water resources, ambient water quality which does not endanger human health, and protection of water ecosystems.

2. For these purposes, the Parties shall each establish and publish national and/or local targets for the standards and levels of performance that need to be achieved or maintained for a high level of protection against water-related disease. These targets shall be periodically revised. In doing all this, they shall make appropriate practical and/or other provisions for public participation, within a transparent and fair framework, and shall ensure that due account is taken of the outcome of the public participation. Except where national or local circumstances make them irrelevant for preventing, controlling and reducing water-related disease, the targets shall cover, inter alia:

a) The quality of the drinking water supplied, taking into account the Guidelines for drinking-water quality of the World Health Organization

a.1: Improving the quality of drinking water from private wells

Baseline analysis: According to Article 3 of Directive 98/83/EC of 3 November 1998 (EC Drinking Water Directive), EU Member States may exempt from the provisions of this Directive water intended for human consumption from individual supplies providing less than 10 m³ a day as an average or serving fewer than 50 persons, unless the water is supplied as part of a commercial or public activity.

Under the German Drinking Water Ordinance of 21 May 2001 (TrinkwV 2001), the requirements governing drinking water quality must be met by all drinking water supplies, regardless of their size, the quantity supplied, the number of persons served, or organizational and ownership structures. Therefore, the minimum requirements cited in the Ordinance also apply to private wells. By adopting this approach, Germany ensures non-discriminating, undivided health protection with respect to drinking water for all citizens, irrespective of the type of drinking water supply that people are depending on. Such facilities are also subject to surveillance by the authorities.

In Germany, around 99.2 % of the population were connected to the centralised public water supply in 2007. Around 700,000 citizens were supplied with water from some 185,000 private wells (assigned to private houses or villages). While the level of connection to central water supply is expected to increase slightly in future, a significant proportion of the rural population will continue to be supplied from private wells.

As most of the parameters laid out in the EC Drinking Water Directive are met in more than 99 % of cases, overall, the drinking water quality from large, central, public supplies is considered to be "very good". However, the available data on drinking water quality from private wells indicate that it is more difficult for such facilities to comply with microbial and chemical quality requirements, and that this area therefore offers potential to improve drinking water quality.

The identified deficits include a lack of technical knowledge among the owners of private wells regarding their statutory obligations under the Drinking Water Ordinance, the potential hazards to drinking water quality, correct operation, and any repair and rehabilitation measures that may be required. A lack of access to information about these topics which is easy to understand is also a recognised problem.

National target a.1: To improve access to information and sensitise the owners of private wells to the potential hazards to drinking water quality and their obligations under the Drinking Water Ordinance.

Target date: 31 December 2011

Activities: One central task is to improve access to information and support for owners of private wells, enabling them to continuously supply drinking water that meets the requirements of the Drinking Water Ordinance. A joint working group on small-scale drinking water supply systems already exists, and includes representatives of the Federal States (*Länder*) and Federal authorities. This working group will develop an advice booklet containing recommended actions and information for private well owners. The advice booklet shall provide them with general information on the different types of wells, inform them of their statutory obligations, highlight the benefits of regular controls conducted by themselves, inform them on common hazards in the vicinity of wells as well as on potential structural damages, and highlight the options for repair, control and monitoring. It is furthermore the aim to help improve communication between the owners of private wells and the authorities through this advice booklet. The mandate of the working group also includes the ongoing discussion of further aspects of improving small-scale water supplies.

Indicator: Publication of the advice booklet containing recommended actions and information, and its distribution to all health authorities and other relevant institutions and organisations.

a.2: Amendment to the Drinking Water Ordinance¹

Baseline analysis: European Directive 98/83/EC of 3 November 1998 (EC Drinking Water Directive) was transposed into national law by the currently valid German Drinking Water Ordinance (TrinkwV 2001). In continuation of the Drinking Water Ordinance of 1990, which was already way ahead of the EC Drinking Water Directive of 1998 in terms of protection levels, the 2001 Ordinance includes several provisions that go beyond those of the Directive; the minimisation requirements formulated in the EC Directive were already met by the TrinkwV 2001 at the time of its entry into force in January 2003. In order to maintain protection levels and uphold uniform standards of consumer protection, Germany chose to refrain from using the exemptions offered by the Directive (e.g. for small scale water supplies or private wells).

The 1998 Directive is based on the state of technical/scientific knowledge of approximately 1995. For precautionary reasons, a number of national amendments that exceed the requirements of Directive 98/83/EC are now needed (introduction of a parametric value for uranium, reduction of the parametric value for cadmium, clear provisions on legionella in hot water installations).

The presence of lead as a material in water distribution systems, including drinking water installations, is another special issue. In addition to the compulsory reduction in the parametric value for lead from 2013 under European law, it is considered necessary to raise consumers' awareness of this topic still further so that they can modify their behaviour accordingly (for example, to refrain from using water that has been in contact with lead for the preparation of food for infants, even if lead levels are below the statutory parametric value) and assert their right to unobjectionable drinking water in rented accommodation where the parametric values are exceeded.

The valid national provisions on the monitoring of special drinking water supplies such as vehicles and temporarily operated systems are currently not regulated with sufficient clarity to allow straightforward enforcement. Furthermore, these aspects are not addressed separately in the Directive, which can therefore not be used as guidance. However, these special systems

¹ The target has been set when the development of this paper has started. As the target has only been achieved recently, it stands as it is in this paper.

necessitate special considerations, e.g. regarding operators' obligations of notification of such facilities, and with regard to monitoring.

The TrinkwV 2001 calls for the accreditation of drinking water analysis laboratories, but not necessarily by the authorities, and this could in theory be irrespective of the matrix concerned. The accreditation system in Germany has since undergone a complete revision, and the path is now clear for official, matrix-specific accreditation.

To date, the Drinking Water Ordinance has not addressed the certification of products in contact with drinking water to verify compliance with the generally acknowledged technical standards.

National target a.2: To revise the national Drinking Water Ordinance with the following individual targets relevant to the Protocol:

- Clear regulations on legionella in hot water installations (water for human consumption as defined by Directive 98/83/EC) from which water is supplied to the general public or within the scope of a commercial activity, including the operator's obligation to ensure analysis, surveillance by the authority and the introduction of a technical action value
- Introduction of a parametric value of 10 µg/l drinking water for uranium
- Reduction of the parametric value for cadmium to 3 µg/l drinking water
- Introduction of special consumer information obligation for operators of drinking water supplies where lead is present as a material in the drinking water distribution network including the house installation
- Comprehensive, specific regulations for water supply facilities in vehicles (such as ships, trains, buses etc.) and temporarily operated water supplies (e.g. at festivals, camp sites etc.), and the creation of clear base, authorising the surveillance of such facilities by authorities.
- A requirement for the official accreditation of certification bodies for products in contact with drinking water, and a requirement for the matrix-specific accreditation of drinking water analysis laboratories.

Target date: 31 December 2011 (target has been achieved earlier)

Activities: Implementation of the required national legislative procedure with the involvement of the Federal States (*Länder*) and associations.

Indicator: Publication of the revised Ordinance in the *Bundesgesetzblatt* (Federal Law Gazette) on 11 May 2011. Due to the constitutional provisions the ordinance will enter into force on 1 November 2011.

b) The reduction of the scale of outbreaks and incidents of water-related disease;

Baseline analysis: Germany has a comprehensive reporting system for infectious diseases, for which in general no distinctions are made with respect to the transmission route. Diseases are reported at local level, largely based on the notification requirements for laboratories, and the information is immediately transmitted electronically, in an anonymous format, to Federal State (*Land*) and Federal Government level. In addition to individual cases, group diseases/outbreaks are also identified and transmitted as linked cases. This system allows the disease to be tackled at local level, and also supports the identification of supra-regional events and trend analysis at all levels.

Many significant infections, including water-related disease, that cause diarrhoea (such as salmonellosis, giardiasis) can also be transmitted via other infection routes, primarily via the consumption of contaminated foods, contact with animals, or human-to-human transmission. In individual cases, it is usually impossible to determine how the disease was transmitted. As such, water-borne transmission cannot necessarily be assumed for a case of giardiasis, for example. On the other hand, the source of the infection can often be identified from an analysis of case clusters (such as drinking water, or a specific meal or individual dish).

In Germany, since the aforementioned reporting system was introduced in 2001, various concentrations of cases of diarrhoea associated with food were identified, however, only a few isolated cases of explicitly water-borne diarrhoeal outbreaks have been identified. Overall, it is assumed that water-borne diarrhoeal disease is very rare in Germany, and that therefore, there is no need for improvement here.

Legionellosis is always transmitted via water; human-to-human transmission does not occur. Legionella-induced pneumonia is relevant from a clinical viewpoint. From an epidemiological point of view, travel-related legionellosis, nosocomial legionellosis, and legionellosis acquired in a private or work environment are distinguished. One problematic aspect of the regulation of drinking water systems is the so-called dose-effect paradox – i.e. the concentration of legionella found in drinking water has no direct correlation with the risk of human disease. For legal reasons, Germany is currently not participating in the European Legionnaires' Disease Surveillance Network (ELDS-NET), aimed at identifying clusters of diseases in hotels or on cruise ships, for example, to the benefit of the travelling German

public. Overall, a large proportion of Legionnaire's disease is under-reported, presumably because specific analyses for legionella is rarely commissioned in case pneumonia has been diagnosed. In recent years, there has been a growing trend in the incidence of diseases reported to the Robert-Koch-Institut (RKI) , thought to be partly due to the more widespread use of the latest detection methods (urine antigen test for *Legionella pneumophila SGI*).

Legionnaire's disease is a severe form of pneumonia induced by *Legionella* bacteria. *Legionella* are widespread in freshwater and can also populate technical water pipeline systems, where they may cause infection under certain circumstances. In 2001, compulsory reporting was introduced for all laboratory-diagnosed legionellosis infections. Germany has also appointed a conciliar laboratory for *Legionella*, based at Dresden Technical University.

Between 2001 and 2009, a total of 3,672 cases of legionella infections were reported under the compulsory notification system. The number of cases increased continuously over the first seven years (2001: 127 cases; 2007: 536 cases), but stabilised in the final two years (2008: 525 cases; 2009: 503 cases). In 2009, 49.6 % of patients became infected in the private environment, 33.2 % were travel-associated, and 13.6 % were associated with a stay in hospital. The average lethality rate was 6.5 %. Lethality was 3 times higher among nosocomial cases than in non-nosocomial cases. The Competence Network for Community-Acquired Pneumonia (CAPNETZ) estimates that there are around 20,000 incidences of the disease each year in Germany. This means that only a small proportion of infections are actually reported, because specific diagnostic analyses are rarely conducted, and many cases are therefore not identified as such. In view of the high level of lethality, diagnostic analyses for legionella are particularly important in all cases of nosocomial pneumonia, and the source of the infection must be investigated. Systematic records of concentrations of legionella contamination in possible sources of infection, verified in case of an infection incident, and predisposing factors in the patient would be helpful in order to create an evidence-based database for assessing the risk of *Legionella* contamination in water.

National target: To maintain the Federal Ministry for Health's (BMG) support of the Conciliar Laboratory for Legionella. In connection with *Legionella*, reference is made to letter a 2) "Revision of the Drinking Water Ordinance".

Target date: No target date.

Activities: Continuation of the BMG's funding of the Conciliary Laboratory for Legionella, based at Dresden Technical University, via the RKI, to promote diagnosis. Data on legionellosis, which is compulsory to be reported, is used by the RKI within the framework of its surveillance system for notifiable diseases. In connection with legionella, reference is made to letter a 2) "Revision of the Drinking Water Ordinance".

Indicator: No indicator.

c) The area of territory, or the population sizes or proportions, which should be served by collective systems for the supply of drinking water or where the supply of drinking water by other means should be improved

Baseline analysis: In 2007, around 99.2 % of the German population was connected to the central public water supply. Around 700,000 citizens were supplied with water from some 185,000 individual wells (assigned to private houses or villages)..

The Joint Monitoring Programme (JMP) of the World Health Organisation (WHO) and the United Nations International Children's Emergency Fund (UNICEF) makes a distinction between drinking water supplies that, by virtue of their design or the type of raw water, are better-suited to adequately protect against contamination and therefore supply safe drinking water (*improved sources*), and those which are unsuitable or less suitable for this purpose (*unimproved sources*).

All facilities in the central public drinking water supply system in Germany are rated as the JMP category *improved*. The drinking water sources primarily used in Germany for private wells (such as protected boreholes, protected dug wells and protected springs; on properties with a purely piped design) are likewise classed as *improved* according to JMP categories. Thus, according to JMP-definition – as also published in the most recent JMP report from 2008 – 100 % of the population in Germany have access to *improved* drinking water supplies. As such, it is not possible to improve this area any further.

While a slight increase in the level of connection to the central public drinking water supply is anticipated in the future, part of the rural population will continue to receive its drinking water from private wells. This is expedient for hygiene, technical and economic reasons. The pipelines of the central drinking water supplies that supply only one or only a few delivery points in remote areas can experience lengthy periods of stagnation, representing a hygiene risk. In certain cases, connecting remote properties to the central drinking water supply via pipework would also entail significant costs, not always ensuring proportionality of technical and economic input.

National target: No target has been set, since it is not expedient to increase the level of connection to the central public drinking water supply in Germany.

Target date: Not applicable, as no target has been set.

Activities: Not applicable, as no target has been set.

Indicator: Not applicable, as no target has been set.

d) *The area of territory, or the population sizes or proportions, which should be served by collective systems of sanitation or where sanitation by other means should be improved;*

Baseline analysis: In 2010, 100 % of the German population was connected to collective sanitation systems or other means of sanitation.

The Joint Monitoring Programme (JMP) of the World Health Organisation (WHO) and UNICEF makes a distinction between sanitation systems that, by the nature of their construction, ensure that human waste is hygienically separated from human contact (*improved sanitation facilities*), and those which do not (*unimproved sanitation facilities*).

All sanitation facilities in Germany are rated as the JMP category *improved*. According to the most recent JMP report from 2008, 100 % of the German population has access to a hygienic sanitation facility as defined by the JMP. As such, it is not possible to improve this area any further.

96 % of the German population is connected to public sanitation facilities. The remainder of the population has decentralised sanitation systems such as small-scale waste-water treatment plants or septic tanks, the contents of which are disposed of at regular intervals. The remaining small percentage has access to decentralised sanitation. At regional level, especially in eastern Germany, there are plans to increase the level of connection in some areas, based on the provisions of the German Wastewater Ordinance (cf. point e) for further details). It is impossible to quantify this with a percentage or other specific figure. There are no plans for a general increase in the level of connection to central systems. In rural regions, the choice of centralised or decentralised sanitation is a cost consideration.

In accordance with the European Urban Waste Water Treatment Directive (Directive 91/271/EEC), the Federal Environment Agency (UBA) collates data on sanitation facilities for settlements with 50 or more inhabitants. This means that regional connection levels are well-documented. Under this Directive, situation reports are to be submitted to the European Commission every two years.

National target: In view of the connection levels achieved, no target has been set.

Target date: Not applicable, as no target has been set.

Activities: Not applicable, as no target has been set.

Indicator: Not applicable, as no target has been set.

e) The levels of performance to be achieved by such collective systems and by such other means of water supply and sanitation respectively;

Baseline analysis:

Sanitation:

The high level of performance achieved by sanitation systems in Germany is based on the relevant legislation and technical guidelines.

These include Directive 91/271/EEC (Urban Waste Water Treatment Directive) , the Federal Water Act (WHG), a revised version of which entered into force on March 1, 2010, and the Ordinance on Requirements for the Discharge of Waste Water into Waters (Waste Water Ordinance) adopted on the basis of the Federal Water Act, together with the legislation and technical guidelines of Germany's 16 Federal *Länder*.

Directive 91/271/EC calls for the collection of waste water from households and small businesses and the reduction of organic pollution. It also requires the removal of at least 75 % of phosphorous and nitrogen by public waste water treatment plants. A European Commission report on the implementation of this Directive confirms that Germany meets or exceeds these requirements (http://ec.europa.eu/environment/water/water-urbanwaste/implementation/implementationreports_en.htm). In Germany, around 90 % of phosphorous and around 81 % of the nitrogen is removed in public waste water treatment plants.

The Federal Water Act stipulates minimum nationwide requirements on the discharge of waste water into waters and therefore regulates the incidence, avoidance and treatment of waste water. Since 1996, these minimum requirements have been based on the best available technology. The permissible pollutant load is determined by the extent to which emissions can be minimised in a particular industry branch while observing technically and economically viable progressive techniques.

The Waste Water Ordinance adopted in 1997 defines the best available technology for waste water discharges, and now has 57 industry-specific Annexes, e.g. concerning domestic and

public waste water as well as individual sectors of trade and industry. The individual segments regulated by the Annexes are subject to specific waste water requirements, which are updated in accordance with the development of best available technology.

The Federal Water Act also stipulates that waste water installations may only be constructed, operated and maintained in accordance with the generally acknowledged technical standards. These technical standards may be based on the regulations of the respective trade associations or DIN standards.

In Germany, there are currently some 10,000 public and around 3,300 company and industrial waste water treatment plants. The majority of public waste water treatment plants are small to medium-sized plants. There are some 545,000 km of public sewers in Germany.

There is no general potential for improvement in terms of the purification performance of these waste water treatment plants (cf. also points d), g) and h)). At regional level, phosphate elimination requirements may be increased under the provisions of the EC Water Framework Directive (Directive 2000/60/EC), but this is impossible to quantify.

Decentralised sanitation must likewise comply with the technical standards – for example, as a general principle, small-scale waste water treatment plants must fulfil the requirements of Annex 1 to the Wastewater Ordinance.

The German Waste Water Charges Act regulates the levying of charges for the direct discharge of waste water into a waterbody. The charge is based on the volume and toxicity of certain discharged constituents, further details of which are regulated in an Annex to the Act. The fee per contaminant unit is currently € 35.79.

Fees for the treatment of waste water are payable by all producers of waste water, including private households. The fee levels vary according to region. They are determined by the local authorities responsible for waste water disposal based on the local conditions (location, geology, density of population, development stage of waste water treatment plants etc.). According to the most recent statistical survey in 2007, the average waste water fee was € 2.29 per m³.

In the German water sector, the energy efficiency and energy consumption of waste water treatment plants is currently the subject of some debate, as is the extraction of energy from waste water. Waste water treatment plants are increasingly undergoing energy analyses, and may be eligible for government subsidies.

The prevention of micro-pollutants, e.g. from pharmaceutical residues etc., is also a topic of growing significance. The Federal Government and some *Länder* are engaged in research and pilot projects to investigate ways of avoiding micro-pollutants discharges.

It is not currently possible to derive any objectives from these discussions.

In order to further increase the level of performance in sanitation and water supply, voluntary benchmarking in both areas has been conducted – cf. for example http://www.bdew.de/bdew.nsf/id/DE_Benchmarking-Broschuere?open&l=DE&ccm=420100030.

Water supply:

The quality of water supplied by the public drinking water supply in Germany is good. Over the period 2005-2007, "large-scale" water supplies (> 1,000 m³ per day or > 5,000 supplied individuals), which supply around 80 % of the population in Germany with drinking water, delivered a very good quality on average; measurements performed within the context of regulatory surveillance revealed that requirements were met and parametric values not exceeded in more than 99% of the cases for most microbial and chemical quality parameters. The only parameters for which thresholds were exceeded in more than 1 % (up to 2 %) of the cases were coliform bacteria, and in the reporting year 2006, nitrate.

The rate of water loss, as an average for Germany as a whole, is extremely low at 8.9 % (2007), even by comparison with other EU Member States. For example, Berlin achieved an excellent result of 2.4 % (2007), despite having an old and sprawling system.

The individual reports of the Federal States (*Länder*) indicate that "small-scale" public water supplies (< 1,000 m³ per day or < 5,000 supplied individuals) perform less well than larger supplies in terms of exceeding individual parameters. A nationwide survey is not yet

available, but figures for 2009 are expected to become available for the first time in conjunction with reporting under the Drinking Water Ordinance. A one-off survey of small-scale supply facilities for the period of 2007/2008 by the EU Commission likewise suggested that the larger the drinking water supply, the less likely it is that threshold values are exceeded.

National target: To describe and subsequently continuously improve drinking water quality from small-scale public drinking water supplies.

Target date: Continuous improvement. It is not yet possible to specify a target date.

Activities: Improving the information base for determining and assessing the level of performance of small-scale public drinking water supplies with regard to consistent drinking water quality.

Indicator: Performance of small-scale public drinking water supplies with regard to drinking water quality compared with large-scale water supplies (> 5,000 supplied individuals).

f) The application of recognized good practice to the management of water supply and sanitation, including the protection of waters used as sources for drinking water;

Baseline analysis:

Sanitation:

The German Federal Water Act requires the best available technology to be used for sanitation. The Waste Water Ordinance defines the best available technology for public waste water disposal and for various sectors of trade and industry. For further details, reference is made to the comments under point e).

The *Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall e.V.* (German Association for Water, Waste Water and Waste, DWA), as a technical-scientific association, formulates sanitation regulations in the form of guidelines, codes of practice etc.

The protection of waters as sources for drinking water:

In Germany, all groundwater is subject to the principle of national protection. This has been fixed in national law, and more recently at the level of EC law, for example with the EC Water Framework Directive (Directive 2000/60/EC) and its Daughter Directive on the protection of groundwater against pollution and deterioration (Directive 2006/118/EC) which have been transposed into national law.

Article 7, paragraph (3) of the EC Water Framework Directive calls for the protection of bodies of water used for drinking water abstraction, with the aim of avoiding a deterioration in their quality and minimising the level of purification treatment required in drinking water production.

For example, water protection areas have been legally enforced for several decades in order to protect groundwater resources that are used or will be used for drinking water abstraction. Depending on the specific protection needs of the area, certain activities such as the operation of petrol stations or agricultural fertilisation are prohibited in these 13,500 or so areas, which are generally comprised of three protected zones. This prevents groundwater resources from

becoming contaminated with pollutants. In many areas, voluntary cooperation arrangements have existed between farmers and water supply companies for many years, which provide farmers with fixed-rate compensation for the loss of earnings associated with land use or fertilisation restrictions.

The EC Nitrates Directive (Directive 91/676/EEC) requires the observance of good agricultural practices and the preparation of action programmes to reduce nitrate discharges, whose effectiveness must be monitored. In Germany, the Nitrates Directive was transposed into national law in the Fertilisation Ordinance (*Düngeverordnung*), which regulates the use of fertilisers, the storage of slurry etc. For more than ten years, various more extensive programmes have been in place in the *Länder* as well as the aforementioned cooperation arrangements between water utilities and agriculture aimed at reducing nitrate pollution.

Germany has comprehensive monitoring networks with numerous measuring sites for both surface waters and groundwater. The requirements governing these monitoring networks are derived from national and European guidelines. They continuously monitor the water status and the impacts of any measures implemented, and serve as the basis for decision-making on the need for further measures.

Water supply:

Inter alia, the requirements of the Drinking Water Ordinance (TrinkwV 2001) are considered to have been met, provided the generally acknowledged technical standards for water abstraction, water treatment and water distribution are applied. These standards are, amongst others, published by the *Deutscher Verein des Gas- und Wasserfaches e.V.* (German Technical and Scientific Association for Gas and Water, DVGW) as part of their technical regulations. There are currently some 300 technical standards in place detailing recognised good practices in planning, construction, operation and maintenance throughout all stages in the drinking water supply chain. Collective compliance with these good practices is intended to ensure a safe drinking water supply. The technical standards are updated regularly to reflect the latest scientific and technical developments.

The Ordinance on the General Conditions for Water Supply (AVBWasserV), which regulates supply conditions between the water utilities and their connected customers, stipulates that the

customer's equipment (i.e. the drinking water installations in buildings) must also comply with generally acknowledged technical standards.

In practice, the extent to which generally acknowledged technical standards are applied can vary. Reports indicate that technical standards are generally taken into account and applied by the large water utilities, while smaller-scale suppliers have implementation deficits, often due to limited resources (personnel, financial) and a lack of awareness of the problem. In this field in particular, it is necessary to promote the technical standards.

Alongside technical standards, the DVGW's Technical Safety Management (TSM) system is a sector-specific management system for voluntary use by the water utilities which can also be subject to external auditing. Using the TSM strengthens the structural and procedural organisation of water utilities, raises qualification standards, and above all, boosts knowledge and application of the technical standards, which in turn promotes safe water supply. Germany currently has some 350 (as at the end of 2010) water utilities confirmed by a TSM.

The EU Commission has been planning to incorporate aspects of the Water Safety Plan (WSP) concept proposed by the World Health Organisation into the revised EC Drinking Water Directive. The requirements and methodological components of the WSP concept have already been integrated into technical standards in Germany with DVGW Guideline W 1001 "Safe and secure drinking water supply - risk management under normal operating conditions," and linked to the TSM.

National target: To increase the number of water utilities with TSM confirmation and ensure compliance with the technical standards.

Target date: 31 December 2013

Activities: Within the framework of voluntary commitments by the water supply sector.

Indicator: Increase in the number of German water utilities confirmed by TSM.

g) The occurrence of discharges of: i) Untreated waste water and ii) Untreated storm water overflows from waste-water collection systems to waters within the scope of this Protocol;

Baseline analysis: Untreated waste water is only discharged into waters in rare cases of malfunctions or failures in waste-water treatment plants caused by extreme flooding. The relevant safety provisions are technically adhered to.

In most developed or surface-sealed areas, only some of the precipitation water reaches the hydrological cycle naturally; a significant portion is discharged via the sewer system. In Germany, two different sewage systems are used: the combined discharge of precipitation water and sewage (combined system), and discharge in two separate sewers (separate system). However, in the past, discharges of precipitation water from separate sewers and overflows from combined systems have led to water quality problems. Over the past 35 years, Germany has addressed these adverse impacts primarily by building more than 45,000 rainwater treatment facilities (rain overflow reservoirs and canalisation, rain storage reservoirs and rain purification ponds), a large proportion of which are only used in rare rainstorm events.

Because waste water treatment plants are well-developed, in the event of heavy rain, significantly higher pollutant loads are often discharged into waters from the public waste water system as a result of combined sewer overflows than is the case with normal operation of waste water treatment plants. Implementation of the EC Water Framework Directive (Directive 2000/60/EC) has confirmed the importance of rainwater discharges for water quality. For this reason, over the next few years, further action will be taken to reduce pollutant discharges from rainfall. Measures include the decentralised, local infiltration of rainwater, especially in new residential developments, the more widespread use of separate sewers, and the improved treatment of combined sewage and rainwater. Water legislation in Germany already stipulates the largely decentralised management of rainwater with local infiltration or local discharge, and this is already being successfully trialled at a regional level. Some of the *Länder* have created subsidy programmes for ecological rainwater management. As such, it is impossible to derive any general objectives in this connection.

If the bathing water profiles prepared under the EC Bathing Water Directive (Directive 2006/7/EC) reveal significant hygiene pressures on bathing waters as a result of combined sewage discharges, requirements will need to be imposed to improve bathing water quality in

this area too. For example, better protection from hygiene pressures can also be achieved by interspersing planted soil filters or by reducing the frequency of combined sewage discharges. For further details, reference is made to the comments under point j).

National target: No target will be set.

Target date: Not applicable, as no target has been set.

Activities: Not applicable, as no target has been set.

Indicator: Not applicable, as no target has been set.

h) The quality of discharges of waste water from waste-water treatment installations to waters within the scope of this Protocol;

Baseline analysis: In Germany, generally speaking, the construction and operation of waste water treatment plants and the discharge of treated waste water into the receiving water requires the approval of the competent water authorities, in accordance with the statutory guidelines (cf. in this connection the comments under point e)).

The operation of waste-water treatment plants and the quality of the treated waste water are continuously monitored by the competent authorities as well as by the operators of waste water treatment plants under the self-monitoring scheme, which is now well-established.

In the event of malfunctions, there are warning and alarm systems which are also linked to the warning and alarm systems on international rivers.

For further details, reference is made to the comments under point e).

More ambitious targets for nitrogen and phosphorous elimination may be adopted at a regional level as a result of the EC Water Framework Directive (Directive 2000/60/EC). Any remaining mechanical/semi-biological small-scale waste water treatment plants are to be upgraded with improved biological purification techniques.

If the bathing water profiles prepared in accordance with the EC Bathing Water Directive (Directive 2006/7/EC) reveal significant hygiene pressures on bathing waters as a result of waste water, the treated waste water should also be subject to microbial quality requirements (cf. also in this regard points g) and j)).

A general national objective cannot be derived from these regional-specific objectives.

National target: No objective has been set in view of the standard of quality achieved.

Target date: Not applicable, as no target has been set.

Activities: Not applicable, as no target has been set.

Indicator: Not applicable, as no target has been set.

i) The disposal or reuse of sewage sludge from collective systems of sanitation or other sanitation installations and the quality of waste water used for irrigation purposes, taking into account the Guidelines for the safe use of waste water and excreta in agriculture and aquaculture of the World Health Organization and the United Nations Environment Programme;

Preamble: The terms "disposal or reuse", as cited in the text of the Protocol, are used differently in Germany. In Germany, "disposal" encompasses both the recovery (e.g. application of sewage sludge to soils for fertilisation) and disposal of sewage sludge (e.g. after thermal treatment in incineration plants). The term "reuse" presupposes that the material has previously been used, which is not the case with sewage sludge.

Baseline analysis: In Germany, sewage sludge is applied to the soil as an agricultural and horticultural fertiliser, or for (thermal) energy recovery. In selected German *Länder*, as a precautionary measure, development is moving away from the direct use of sewage sludge in agricultural soils, in favour of incineration (co-incineration in power plants, waste incineration plants and sewage sludge mono-incineration plants). Apart from plant nutrients (particularly phosphates), sewage sludge also contains a number of pollutants from the waste water treatment process. In recent years, levels of heavy metals and inorganic pollutants have decreased significantly, but sewage sludge may still contain pollutants that are not readily degradable. Apart from a general increase in environmental awareness among society, the decrease in pollution is also attributable, for example, to the improved monitoring of indirect discharges, i.e. avoiding inputs at the source.

The EC Sewage Sludge Directive (Directive 86/278/EEC) regulates the protection of the environment, and in particular of the soil, when using sewage sludge in agriculture. The Directive was transposed into German national law with the Sewage Sludge Ordinance (AbfKlärV), which imposes far more stringent requirements than the Directive. These requirements will be tightened up still further in the on-going revision of the AbfKlärV, extending the Ordinance's scope of validity to include horticultural measures, give greater consideration to organic pollutants, and regulate the hygiene safety of sewage sludge, as well as ensuring regular, voluntary quality assurance. By imposing high standards for sewage sludge (including organic and inorganic pollutants) that is recovered for use in soil, it is possible to reduce or avoid cultivation-related emissions from fertilisers, particularly into the

soil, and to promote a sustainable closed substance cycle in the interests of resource conservation.

Parallel to sewage sludge recovery for use in soil, the recovery of plant nutrients (particularly phosphorous) from waste water, sewage sludge and other substances is currently under debate in Germany, particularly within the framework of a Federal-*Länder* collaboration. As well as being vital for life on earth and in limited supply, phosphorous has more recently developed into a strategically important raw material. At a global level, some countries are already engaging in activities to safeguard their raw materials.

Although there are various technical procedures available in Germany for nutrient recovery, particularly due to research financed by the Federal Government and *Länder*, much work is still needed before a large-scale technical application can be consistently implemented. Until then, the recovery of nutrients from the co-incineration of sewage sludge in power plants or waste incineration plants remains impracticable, and valuable phosphates contained in the incineration ash are therefore not being exploited.

It is also worth considering the creation of legal and financial framework conditions that will make it more attractive to establish new techniques in the closed-substance cycle.

Federal-*Länder* activities for the sustainable use of plant nutrients from waste water, sewage sludge and other substances (closed substance cycle) are an on-going task.

The Federal and *Länder* Governments support such activities through research and development projects as well as through investment projects to demonstrate the practical suitability of existing techniques.

In Germany, very little waste water is used for irrigation purposes. There is a DIN standard covering this topic. Under the German Fertilisation Act and Fertilisers Ordinance, domestic waste water cannot be applied to agricultural land.

National target: To update the national Sewage Sludge Ordinance (AbfKlärV)

Target date: 31 December 2011

Activities: Introduction and implementation of the required national legislative procedure with the involvement of the *Länder* and associations

Indicator: Publication of the revised Ordinance in the *Bundesgesetzblatt* (Federal Law Gazette).

j) The quality of waters which are used as sources for drinking water, which are generally used for bathing or which are used for aquaculture or for the production or harvesting of shellfish;

Baseline analysis:

Regarding the quality of waters used for drinking water, reference is made to the comments under point f).

Waters used for bathing:

The requirements governing the quality of waters which are generally used for bathing are derived from the EC Bathing Water Directive (Directive 2006/7/EC), which stipulates microbial limits for the indicators *Escherichia coli* and *Enterococci*. The limits are different for coastal and inland bathing waters. Based on these parameters, bathing waters are assigned to one of 4 quality levels, on the basis of measurements extending over several years. The first classification under the new evaluation system will be implemented in 2011. Until then, the limits of the old EC Directive (Directive 76/160/EEC) will continue to apply. By 2015, all bathing waters designated under the Directive should exhibit adequate quality as a minimum requirement.

Directive 2006/7/EC was transposed into national law in 16 Ordinances in the German *Länder*. Germany's bathing waters are continuously monitored in accordance with the aforementioned guidelines. Their status has improved continuously in recent years.

At the end of each year, Germany reports to the European Commission on the quality of its bathing waters during the preceding bathing season. The reports from all EU Member States are combined and published by the European Commission in the form of the Bathing Water Atlas. For the 2010 season, reference is made to the link http://ec.europa.eu/environment/water/water-bathing/report_2010.html.

For the 2009 bathing season, Germany reported 2,279 bathing waters, including 373 in coastal waters and 1,906 in inland waters, i.e. lakes or rivers. The binding EU limits are met by 99.5 % of coastal bathing waters and 98.4 % of inland bathing waters.

The Bathing Water Directive requires the preparation of so-called bathing water profiles that describe the bathing waters and identify and assess potential sources of pollution. The contamination of bathing waters by diverse microbial pollutants from agricultural land is a repeated occurrence. Appropriate remedial action is difficult, because it is often impossible to identify the source of the pollution.

The aforementioned profiles must be prepared for the first time in March 2011, and regularly reviewed and updated thereafter.

Waters used for aquaculture and for the production or harvesting of shellfish:

The Freshwater Fish Directive 2006/44/EC (formerly Directive 78/659/EEC) aims to protect and/or improve the quality of those running or standing fresh waters which support, or which, if pollution were reduced or eliminated, would become capable of supporting certain species of fish. This Directive sets out physical, chemical and microbial quality criteria for fishing waters, and stipulates the minimum water sampling frequency and analysis techniques. Fishing waters are sub-divided into salmonid waters and cyprinid waters. This Directive does not apply to waters in natural or artificial fish ponds used for intensive fish-farming. The Directive has been transposed into national law in Germany by the 16 *Länder* in the form of ordinances.

The Shellfish Waters Directive (Directive 2006/113, formerly Directive 79/923/EEC) is designed to maintain the quality of waters suitable for the harvesting of mussels (bivalve and gastropod molluscs), and contributes to the quality of shellfish products intended for human consumption. The Directive sets out limits for certain parameters (such as pH value, temperature, salt content, dissolved oxygen) which must be observed by shellfish waters designated by the Member States. It also outlines sampling requirements and highlights the need for programmes in order to achieve aims of the Directive. The Directive has been transposed into national law in Germany in the form of ordinances by the *Länder* concerned.

Germany reports regularly to the European Union on the implementation of both Directives, most recently for the reporting period 2005 - 2007. The quality of both types of waters has improved continuously in recent years. Only minimal, temporary infringements of the limits

occur, due primarily to climatic factors in hot summers. The Water Framework Directive (Directive 2000/60/EC) aims to repeal both these Directives in 2013, and incorporate them into the Water Framework Directive and its implementation. There is no reason to specify national targets beyond the implementation of these Directives.

Directive 2006/88/EC sets out health and hygiene provisions for aquaculture animals and related products, and for the prevention and control of certain diseases in aquatic animals. The main focus is on preventing outbreaks of disease in aquaculture animals. In particular, the Directive aims to improve trade within the Community and with external countries. The Directive covers fish, molluscs and crustaceans and their derivatives, and provides for the licensing of aquaculture production businesses and processing establishments by the competent authority in the relevant Member State. The Directive contains a list of exotic and non-exotic diseases and the animals susceptible to them. It also outlines the measures to be taken if one of the listed diseases is suspected, including in particular the analysis of samples in a qualified laboratory, together with a ban on the movement of aquatic animals out of or into the operation in question, and the performance of epidemiological studies. If the presence of a listed disease is confirmed, a quarantine zone should be set up around the operation, together with a monitoring zone, and a ban on the movement of animals should be imposed. Germany transposed this Directive into national law with the new Fish Disease Prevention Ordinance of 2008. There is no reason to set national targets.

National target: No target set

Target date: Not applicable, as no target has been set.

Activities: Not applicable, as no target has been set.

Indicator: Not applicable, as no target has been set.

k) The application of recognized good practice to the management of enclosed waters generally available for bathing

Baseline analysis: § 37, paragraph (2) of the Act on the Prevention and Control of Infectious Diseases in Humans (Infectious Diseases Prevention Act - IfSG) regulates the quality of waters used for swimming and bathing. Waters that are made available for bathing or swimming in commercial operations, public baths or other facilities that are not solely for private use must be of sufficient quality to preclude fears of damage to human health, particularly as a result of pathogens.

Treatment of the swimming and bathing water, including disinfection, is essential in such bathing waters in order to effectively prevent the transmission of pathogens in the water. Contamination with the inevitable by-products of disinfection should be minimised to tolerable health limits. The requirements set out in DIN standard 19643 "Treatment of Swimming and Bathing Pool Waters", published by the German Institute for Standardization (DIN), are regarded as generally accepted technical standards.

All pools and spas built in line with regulations and in which water treatment corresponds to the generally accepted technical standards can be assumed capable of achieving hygienically faultless water quality.

Pools and spas, including their water treatment facilities, are subject to official monitoring by the competent authorities in the *Länder*. As there is no standardised nationwide regulation on the quality of swimming and bathing waters in Germany, the monitoring authorities in the *Länder* are guided by the technical regulations and the existing technical recommendations published by the Federal Environment Agency (UBA), such as the recommendation on "Hygiene requirements for swimming pools and the monitoring thereof" of 2006.

Germany is involved in the formulation of an "OECD Guidance Document for Efficacy of Pool and Spa Disinfectants", which will serve as the basis for international harmonisation of the efficacy testing and licensing of disinfectants for pool and spa waters in EU Member States. The OECD document is available in draft format, and is in the process of being harmonised by the OECD Member States.

The BMG's Swimming Pool Water Commission at the UBA issues recommendations and publications for consumer education, and supports operators and local authorities in ensuring the correct operation of swimming pools.

Any remaining uncertainties on evaluating the health risks associated with swimming in chlorinated water need to be resolved, and scientific foundations for risk assessment drawn up. For example, a national research project has been initiated on the topic of "health-related optimisation of pool and spa water treatment". This project aims to resolve the remaining uncertainties on evaluating the health risks associated with swimming in chlorinated water, and formulate scientific foundations for risk assessment.

National target: To update the technical regulations on swimming pool water

Target date: 31 December 2012

Activities: The amendment of standard DIN 19643 "Treatment and disinfection of water used in bathing facilities", as a generally accepted technical standard, will be continued and completed. The contents of the standard will be adapted in line with the latest scientific findings regarding the health effects of disinfection by-products and the latest treatment techniques such as ultra-filtration.

Indicators: Publication of an updated standard DIN 19643 "Treatment and disinfection of water used in bathing facilities"

l) The identification and remediation of particularly contaminated sites which adversely affect waters within the scope of this Protocol or are likely to do so and which thus threaten to give rise to water-related disease;

Baseline analysis: Significant discharges into groundwater may be the result of harmful soil changes and residual contamination. The principal aim of the Act on Protection against Harmful Changes to Soil and on Rehabilitation of Contaminated Sites (Federal Soil Protection Act) of 1998 is to prevent soil contamination (including contaminated sites). The Act defines harmful soil changes as harmful impacts on soil functions that are able to bring about soil hazards, disadvantages or considerable nuisances for individuals or the general public. As well as averting threats, it also provides for the adoption of statutory ordinances outlining precautionary measures to prevent harmful soil changes. By imposing suitable requirements, new contamination can be prevented from occurring in the future, while also ensuring that soil contamination never exceeds the hazard limits.

The Federal Soil Conservation Act paved the way for the adoption of a Federal Ordinance on Soil Protection and Contaminated Sites. This Ordinance, adopted in 1999, concretises the legal requirements pertaining to the analysis and evaluation of sites suspected of harbouring soil contamination or residual pollution, defines precautionary, decontamination and restriction measures, and the planning of remedial action, and sets out requirements governing the prevention of harmful soil changes.

The Federal Soil Protection Act stipulates, for example, that the polluter or land owner may be obliged to clean up any damage to groundwater arising as a result of harmful soil changes or residual pollution. If the test values specified in the Soil Conservation Ordinance are exceeded, more in-depth analyses will need to be carried out. If these suspicions are confirmed, further measures will be needed to exclude threats to human health or the environment. The requirements pertaining to remedial action are derived from soil protection and water legislation. In treating residual pollution, it has been established that the threat to water is usually decisive when assessing the need for remediation.

The processing status (identification, analysis, risk assessment, remediation, monitoring) in the Federal *Länder* is ascertained annually, but no differentiation is made according to the protected commodities at risk (i.e. waters).

National target: No target in view of the statutory provisions already in force.

Target date: Not applicable, as no target has been set.

Activities: Not applicable, as no target has been set.

Indicator: Not applicable, as no target has been set.

m) The effectiveness of systems for the management, development, protection and use of water resources, including the application of recognized good practice to the control of pollution from sources of all kinds;

Baseline analysis: The EC Water Framework Directive (Directive 2000/60/EC) calls for surface waters and groundwater to be managed on the basis of river basin districts, with the aim of achieving a good status by no later than 2027. Germany duly submitted its management plans and programmes of measures under the requirements of the EC Water Framework Directive for ten national or international river basin districts by the end of 2009. The programmes of measures are to be implemented over the next few years, with the aim of improving the ecological, chemical and quantitative status of waters and achieving the specified national objectives for the first implementation phase. Updated plans and programmes are to be submitted by the end of 2015.

For a summarising account of the EC Water Framework Directive's implementation to date, reference is made to the brochure published by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the Federal Environment Agency (UBA) <http://www.bmu.de/english/water-management/downloads/doc/46441.php>.

The relevant European water protection directives have already been considered in detail under previous points.

The avoidance and reduction of waste water has always been a much-debated issue in Germany. Discussions surrounding separate waste-water systems (eco-sanitation), for example, are still in their infancy.

Demographic developments and their impacts on waste water disposal and water supply systems are likewise keenly debated among the relevant organisations and in conjunction with town planning. Existing systems will need to be adapted in line with falling population numbers, for example with regard to the decreasing volume of waste-water, the re-allocation of fixed costs etc.

German law sets out requirements governing plant-specific water pollution control, for example with regard to the storage, refilling, handling, production, treatment and use of

substances constituting a hazard to water. As a minimum requirement, all installations must meet the generally accepted technical standards. Plant-specific water pollution control requirements are likewise found in European law, such as the Directive concerning integrated pollution prevention and control (former IPPC Directive 96/91/EC, now Industry Emission Directive 2010/75/EU).

For further details, reference is made to comments under other points.

National target: No target, as the existing systems are effective.

Target date: Not applicable, as no target has been set.

Activities: Not applicable, as no target has been set.

Indicator: Not applicable, as no target has been set.

n) The frequency of the publication of information on the quality of the drinking water supplied and of other waters relevant to the targets in this paragraph in the intervals between the publication of information under article 7, paragraph 2.

Baseline analysis:

In Germany and Europe, there is a wealth of information available regarding the quality of drinking water, bathing waters and other water quality-related criteria.

Water quality and waste water:

There is a wealth of information available from the Federal Environment Ministry and the Environment Ministries of Germany's 16 Federal *Länder* regarding the quality of water and waterbodies. Cf. http://www.bmu.de/english/water_management/aktuell/3868.php and the homepages of the *Länder*, a list of which may be found under the following link, <http://www.lawa.de/Links.html>. Links to the websites of international river basin commissions and national river basin communities, which regularly publish reports on water quality, can also be found here. These pages are updated at regular intervals, generally in line with the mandatory reporting cycles, especially at European level.

Examples:

The German *Länder* and the competent water and/or health authorities publish information on the quality of bathing waters on the Internet and in up-to-date brochures. For a selection of links, reference is made to the homepage of the Federal Environment Ministry at <http://www.bmu.de/gewaesserschutz/fb/badegewaesser/doc/3553.php>

The Federal and *Länder* government information and communication platform *Wasserblick* reports on implementation of the EC Water Framework Directive (Directive 2000/60/EC) (<http://www.wasserblick.net/servlet/is/1/?lang=en>) as do the websites of the environment ministries of Germany's 16 *Länder*. The summarising report on implementation of the Water Framework Directive has already been discussed under point m) above.

European Directives such as the EC Public Waste Water Directive (cf. point e) above) require EU Member States to submit regular reports for evaluation by the European Commission and publication on its homepage.

At regular intervals, the Federal Statistical Office (www.destatis.de) compiles official national data on various aspects of public and non-public water resources management, such as water abstraction and water use, water supply and waste water disposal, differentiated according to the 16 German *Länder*, industry segments etc. For example, reference is made to the extensive collection of data on the nature and extent of the sewer system and rainwater treatment in Germany published in September 2009, at <https://www-ec.destatis.de/csp/shop/sfg/bpm.html.cms.cBroker.cls?cmspath=struktur,vollanzeige.csp&ID=1024605> (homepage is currently under development, link is not active for the moment). The statistical surveys are based, *inter alia*, on the German Environmental Statistics Act.

The European Water Information System WISE (cf. <http://water.europa.eu/>), currently under development, will in future provide information on all European water protection directives and the status of their implementation in the 27 EU Member States, alongside up-to-date data on water quality etc.

Drinking water:

As required by Article 13 of the EC Drinking Water Directive, every three years the BMG and the UBA publish a consumer information report on the quality of drinking water in Germany. This report, which is drawn from annual drinking water quality reports from the Federal States (*Länder*), covers large-scale water supplies, including the related pipeline network and domestic drinking water installations, that deliver more than 1,000 m³ per day on average, or that supply more than 5,000 people, for which reporting is mandatory. It does not include small-scale water supplies that supply fewer than 5,000 people and deliver less than 1,000 m³ per day, nor does it include private wells.

Under the Drinking Water Ordinance, the competent authorities are responsible for ensuring that consumers receive accurate information about their drinking water. The water utilities must provide the necessary up-to-date information. They publish information on the general quality of drinking water in the daily newspapers, in their own or official bulletins or on the

Internet. Water utilities must notify the general public, home-owners and residents about the condition of a drinking water installation if there are potential restrictions on usage, for example in the case of lead pipes.

In the event of a deviation from parametric values or temporary drinking water usage restriction, the authorities and water utilities must immediately disclose the precise circumstances surrounding the reduction in drinking water quality, the actual or potential effects, and possible remedial action. Under the EC Drinking Water Directive and Drinking Water Ordinance, there is a special obligation to notify particularly vulnerable population groups.

At present, some of the reporting data from the Federal *Länder* is submitted in hardcopy format, while some is submitted electronically in non-standardised formats to the UBA, where it is manually fed into a central database. The aforementioned national reporting portal, "WasserBLick", will be extended to include drinking water reporting, and all national implementation data will be entered into the WISE system from there, as is already the case for implementation of the Water Framework Directive.

National target: To publish regular reports and consumer information on drinking water quality in water supply zones that deliver more than 10 m³ of water per day or supply more than 50 people.

Target dates: 31 December 2011 (extending "WasserBLick" to include an interface for drinking water) and 31 December 2013 (annual publication of the drinking water quality report in large water supply zones).

Activities: Expansion of the "WasserBLick" reporting platform to include an interface for drinking water, so that in future, it can also be used for the reporting obligations of the Federal Government and Federal States (*Länder*) under the EC Drinking Water Directive and Drinking Water Ordinance. The report on drinking water quality in large water supply zones will be published annually from 2013 onwards. In this way, the general public will have access to prompt, up-to-date, aggregated and local information on drinking water quality via the "drinking water" reporting portal.

Indicator: Use of the interface for drinking water in the "WasserBLiCK" database, and conversion to an annual reporting cycle

o) Additional national target area: Improved national communication and education on water-related issues

Baseline analysis: In order to encourage consumer trust in the foodstuff drinking water and to support the responsible handling of drinking water, it is vital to ensure that consumers are properly informed about this topic. Effective communication and education must therefore provide background information on drinking water, its quality, potential risks associated with its consumption, the role played by threshold values and the implications of exceeding such values, as well as information on what individual consumers themselves can do to avert potential risks associated with drinking water, using a variety of media and targeting a range of different consumer groups.

Whilst the water supply utilities often provide public education on drinking water in a regional context, the BMG and UBA also publish a range of educational materials for the general public. For example, the advice booklet "Trink was – Trinkwasser aus dem Hahn" ("Have a drink – drinking water from the tap") has already been published and informs the general public and the operators and owners of buildings about the risks associated with drinking water installations, and offers recommendations on the planning and operation of such installations. A range of general information is also available on UBA's website about drinking water.

While water sports have many positive aspects, there are also concerns over the associated burdens and health risks, particularly vis-à-vis inadequate water quality and inappropriate conduct. Educating and informing people from a young age can help to significantly reduce these risks. In order to minimise waterborne diseases and bathing accidents, therefore, children and their parents in particular must be made aware of the risks of swimming and bathing and must be trained on proper behaviour related to these activities. In this connection, it is required to inform the general public about the various aspects of bathing waters and the associated potential risks. Particularly by teaching children, who then share their knowledge with their parents, the latter are in turn better-placed to protect their children's health. Until now, only limited educational materials on selected sub-aspects have been available to the general public.

National target: To improve Federal communication and education of the general public on the topics of drinking water, bathing and swimming, with particular consideration for children's health.

Target date: 31 December 2013

Activities:

1. *UBA brochure on drinking water -: "Rund um das Trinkwasser":* There is a keen public interest in the proper handling of the foodstuff drinking water and how to assess the associated risks, but this pre-supposes a solid background knowledge of all related aspects. An advice booklet for the general public will be developed, illustrating all the main aspects of drinking water in a demonstrative format. The booklet will cover the aspects from abstraction and treatment of water into drinking water, its distribution, the relevant legislation, the hygiene aspects and quality standards, all the way to controversial issues such as pollutants in drinking water and the associated potential risks.
2. *Creation and maintenance of a catalogue of frequently asked questions (FAQs):* Based on enquiries submitted to UBA on various aspects of drinking water, which suggest that there is a public interest in this topic, a collection of frequently asked questions and answers is to be compiled. This collection will be continuously updated to reflect e.g. the latest media reports and the subsequent public response to selected drinking water issues. The collection of FAQs is to be published on UBA's website.
3. *Children's book and quiz:* The aim is to educate children of various age groups in water-related issues in a playful manner. An interactive water quiz with computerised animations on the topics of drinking water, open waters, swimming pools and open-air swimming pools will be devised for the over-12s. An illustrated children's book for the under-12s will focus on drinking water and bathing waters.
4. *Website:* Revision of UBA's website in the section on drinking water, with the aim of improving access to information for the general public.

5. *Short films*: UBA's website is to include a library of short films on the topic of drinking water. The project will kick off with two short documentaries. The chosen format will allow the film library to be continuously expanded with short, self-contained films in a variety of styles. The short films can also be used at a variety of public events (such as open house days).

Indicator: Publication of the above mentioned products.