ECONOMIC COMMISSION FOR EUROPE

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR EUROPE

MEETING OF THE PARTIES TO THE CONVENTION
ON THE PROTECTION AND USE OF TRANSBOUNDARY
WATERCOURSES AND INTERNATIONAL LAKES
and
MEETING OF THE SIGNATORIES TO THE PROTOCOL
ON WATER AND HEALTH TO THE CONVENTION

Working Group on Water and Health
Fifth meeting
Geneva, 5-7 December 2005
Item 7 of the provisional agenda

REVIEW AND ASSESSMENT OF PROGRESS UNDER THE PROTOCOL

Prepared by the secretariat

1.   Under article 7 of the Protocol on Water and Health, Parties are required to review and assess their progress towards the achievement of the targets established under article 6, paragraph 2. Furthermore the Meeting of the Parties shall evaluate such progress in implementing the Protocol on the basis of summary reports submitted by Parties, according to guidelines established by the Meeting of the Parties.

2.   In the interim period of the entry into force of the Protocol, the Working Group on Water and Health has developed a number of activities and made proposals for the development of a harmonized system of progress assessment and reporting, taking into consideration, as required by the Protocol, existing reporting mechanisms and information produced for other international forums.

3.   In particular, the Working Group at its fourth meeting entrusted an ad hoc expert group with the identification of elements of the reporting system related to water supply and sanitation. The ad hoc expert group met on 9-10 May 2005 in Copenhagen, at the offices of the WHO Regional Office for Europe. The report of the meeting, including description of and calculation methods for the proposed parameters, is available at http://www.euro.who.int/document/wsn/protMtgMay05.pdf (English only). Annex II summarizes the conclusions of the ad hoc expert group and the parameters proposed.

4.   The present paper reviews the proposals on progress assessment and reporting in accordance with articles 6 and 7 made by the Working Group at its previous meeting and by the ad hoc expert group, and highlights existing gaps.

5.   The Working Group might wish to:

        (a)   Agree on the proposals of the ad hoc expert group;

        (b)   Further elaborate proposals on progress assessment and reporting to cover existing gaps;

        (c)   On the basis of the agreed proposals, request the secretariat to prepare, for the first meeting of the Parties, draft guidelines on the reporting system on the progress in the implementation of the Protocol;

        (d)   Agree to incorporate in the draft workplan under the Protocol an activity on the completion and updating of the draft guidelines on the reporting system, as required under article 16, paragraph 2 (b) of the Protocol;

        (e)   Also agree to include supporting activities to facilitate reporting as part of the draft workplan under the Protocol, such as:

                (i)   Training programmes on benchmarking of water supply and sanitation network performance;

                (ii)   Development of a methodology for the quantitative assessment of health impacts of water services;

                (iii)   Provision of guidance on the assessment of population serviced by water-service connections; and

                (iv)   Development of guidance on sampling procedures for the assessment of microbial and chemical drinking water quality at tap.

Annex I

ELEMENTS OF A REPORTING SYSTEM

I. Drinking water quality - target related to article 6, paragraph 2(a)

1.   The ad hoc expert group proposed to consider microbiological and chemical aspects of drinking water quality.

Microbiological quality

2.   The ad hoc expert group decided to express the microbiological quality of the drinking water through appropriately selected microbiological indicators, and not through an indication of presence or absence of residual chlorine. It advised that a short list of generally acceptable parameters needed to be identified, complemented with parameters of local importance.

3.   The ad hoc expert group proposed *E. coli* and **enterococci** as common parameters in the core reporting system. The mathematical expression of the parameter would be that of the indicator **WatSan_S2** of WHO ENvironment and Health Information System (ENHIS), i.e. the proportion of drinking water samples analysed that fail to comply. Countries should be allowed to report other microbiological quality criteria, particularly *Pseudomonas aeruginosa.* In the selection of additional microbial parameters, Parties may seek guidance from the WHO Guidelines for Drinking-water Quality [1]. Frequency of sampling and analysis should be in accordance with Table B1 of the European Union (EU) Drinking Water Directive [2]. Guidance on common sampling procedures of treated water should be provided, as some countries sample raw water at production units, but do not sample inside houses. Imposing in-house sampling and quality assessment might require a change in national legislation in certain countries.

Chemical quality

4.   Consistent with the above approach for microbiological quality reporting, the ad hoc expert group proposed to work with a core group of parameters, and an additional group of parameters to be shared by countries where such parameters were of common concern. The ad hoc expert group also considered that some countries might not have the necessary calculation capacity to provide national weighted data, and recommended that data be reported by water suppliers on the basis of simple failure rate. The ad hoc expert group therefore recommended that the Protocol reporting system started as a non-weighted system, listing the performance of individual suppliers. This could be reviewed in the future by the Meeting of the Parties, possibly through devising a system of population-based weighted averages. The ad hoc expert group recommended that data be provided on the quality at tap, recognizing that this would require some countries to review their

---

[1]   WHO (2004) Guidelines for Drinking-water Quality (3rd Edition), Vol.1. Recommendations. WHO Geneva. Downloadable from:
http://www.who.int/water_sanitation_health/dwq/gdwq3/en/index.html.
[2]   Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, available at http://europa.eu.int/eur-lex/pri/en/oj/dat/1998/l_330/l_33019981205en00320054.pdf.

national sampling strategy. The ad hoc expert group advised against the setting up of a monitoring programme in public buildings as a core function of the Protocol. The ad hoc expert group recommended that the "core group" of parameters for chemical quality should be derived from the list of chemical parameters of the EU Drinking Water Directive Annex I Part B to comprise the ten most important parameters. Such a list of ten parameters could be reviewed by the Parties at their future meetings. Furthermore, the ad hoc expert group recommended including turbidity among the chemical parameters.

5.   The ad hoc expert group recommended that for each parameter the mathematical expression should to be in accordance with the indicator **WatSan_S3** of ENHIS, i.e. the proportion of samples that fails to comply with chemical quality criteria.

II.   Outbreaks and incidents of water-related disease - target related to article 6, paragraph 2(a)

6.   At its fourth meeting, the Working Group decided that the reporting mechanism should include data concerning the yearly prevalence of water-related diseases, followed where appropriate by reports on the incidence of water-related disease outbreaks. It stressed that priority should be given to the monitoring of the prevalence of cholera, bacillary dysentery (shigellosis), EHEC (Enterohaemorrhagic Escherichia coli, usually of the serotype 0157:H7), viral hepatitis A, and typhoid fever. Surveillance data were also deemed necessary for diseases of secondary importance, particularly campylobacteriosis, cryptosporidiosis, giardiasis, and infections with the calici virus.

7.   It also recommended that the Health for All Database of the WHO Regional Office for Europe (WHO/EURO) should be used as the central reporting mechanism for water-related diseases for the Protocol and therefore requested WHO/EURO to include in the Health for All Database, as soon as possible, all water-related diseases relevant to the Protocol. It also recommended to WHO/EURO that the database should remain sufficiently flexible to include, at a later stage, data on additional diseases, as well as on health impacts of chemical contamination.

III.   Access to drinking water - target related to article 6, paragraph 2(c)

8.   Besides ENHIS, which works at a regional level, access to drinking water is also monitored by the WHO-UNICEF Joint Monitoring Program (JMP)[3], which acts as the official UN monitoring system to assess progress towards the Millennium Development Goals (MDGs). The ad hoc expert group took note of these systems and recommended the use of ENHIS indicator **WatSan_Ex1**, i.e. the number of people with access to safe drinking water connected to public supply.

9.   It was recognized that most water utilities would report on the basis of connections, and not on the basis of population. A methodology was needed to calculate the number of inhabitants from the number of connections registered by the utility. Small, decentralized supplies were not considered to warrant a separate access monitoring system.

---

[3]   See http://www.wssinfo.org/en/welcome.html

IV. Access to sanitation - target related to article 6, paragraph 2(d)

10.   The ad hoc expert group proposed the ENHIS indicator **WatSan_P 1,** i.e. the percentage of population served by sewerage connection to modern wastewater treatment facility producing a regulated effluent discharge monitored by competent authorities.

11.   However, recalling the experience gained under the Mediterranean Action Plan (MAP), it was deemed advisable for the purposes of the Protocol to refine WatSan_P1 by:

(a)   Identifying the proportion of the population served by a sewerage network only, or served by a sewerage network and a wastewater treatment plant;

(b)   Providing information, if a wastewater treatment plant was present, on whether the wastewater treatment facility offers primary, secondary or tertiary treatment.

V. Service quality of collective systems of water supply and sanitation - target related to article 6, paragraph 2(e)

Water supply
12.   Several members of the ad hoc expert group felt that information on the type of drinking water treatment plants in operation was required, especially with regard to disinfection methods. While many countries chlorinate and maintain residual chlorine levels in the network, others refrain from doing so. For those countries that apply chlorination, the level of residual chlorine in the network could be used as a performance parameter, notably showing operational problems (lack of chlorine at the treatment plant) which are a commonly recognized problem in some of the countries. The ad hoc expert group also recognized the importance of unaccounted-for water (UFW) as a health parameter. Although it could be argued that UFW is not directly related to health, different members of the ad hoc expert group felt that the parameter should be included because it indicates both good management and good use of natural resources. The ad hoc expert group therefore decided to recommend the following service parameters:

(a)   Water production and consumption (metered);

(b)   Unaccounted-for water (m^3/km/d);

(c)   Continuity of service (hours of water supplied per day);

(d)   Residual chlorine at consumption point (recommended only for systems subject to mandatory chlorination); and

(e)   Pipe breaks (breaks/km/year).

Sanitation
13.   The ad hoc expert group recommended the following indicators:

(a)   Wastewater indicators:

(i)   Volume of wastewater treated/volume of wastewater not treated;

(ii)   Discharge of treated wastewater; and

(iii)   Discharge of untreated wastewater;

(b)   Plant performance indicators: reduction in Biological Oxygen Demand (BOD5), Chemical Oxygen Demand (COD) and Total Suspended Solids (TSS);

(c)   Network performance indicators: Blockages per km network/year.

14.   None of these parameters have been taken up under the ENHIS network; definitions and calculation methods need to be developed on the basis of other sources. Some members of the ad hoc expert group expressed concern that not all countries might be able to provide all the requested information at a high frequency of reporting and recommended that the reporting mechanism on sanitation should reflect these differences and allow for:

(a)   Detailed and frequent (yearly or half-yearly) reporting when data and capacity are available;

(b)   Less frequent reporting (e.g. once in the interval between two meetings of the Parties) of basic information;

(c)   Reporting of local information on specific problems.

VI.   Application of recognized good practice to the management of water supply and sanitation target related to article 6, paragraph 2(e)

15.   No parameter has been identified for this target. The issue was discussed by the ad hoc expert group that stressed the importance of providing information on resource protection, including on legislation and its effectiveness.

VII. Targets related to article 6, paragraph 2 sub-paragraphs (e) to (n)

16.   Also for these targets no parameters have been identified and agreed upon. The Working Group should agree on how to fill these gaps.

Annex II

**SUMMARY OF THE CONCLUSIONS OF THE AD HOC EXPERT GROUP AND
OVERVIEW TABLE OF PROPOSED PARAMETERS**

1.   In the identification of parameters the ad hoc expert group considered that, given that many of the Protocol Signatories/Parties are members of the EU or are acceding to the EU, all efforts were to be made to harmonize the reporting mechanism under the Protocol with the relevant requirements deriving from water-related Directives of the EU. This, however, did not preclude data, or groups of data, to be included in the Protocol reporting system on locally important concerns (e.g. As, Fe, Mn, NO_3, NO_2).

2.   Indicators and calculation methods developed under ENHIS have been tested under real conditions and found to respond to needs. It would therefore be appropriate to build on this success and integrate the ENHIS indicators into the Protocol reporting process where appropriate.

3.   Most of the countries have, at the national level, opted for a process of electronic data consolidation/data management. Therefore, the Protocol should also base itself on the (electronic) national reporting systems, giving due regard to emerging electronic reporting systems under EU legislation, and assume that these will eventually be capable of supporting electronic data processing and transfer.

4.   Data should be collected in a consistent manner over the entire water cycle:

- ▪ Data on resource water quality should include both surface and groundwater;

- ▪ Data on the functioning of wastewater treatment plants should be done in an integral manner to other data collection needs. The representative of the MAP advised that data should be taken as available, leading to a core set of common data, with the possibility of accommodating more detailed information complementary to the core set. The labour intensive character of this part of the reporting system should not be underestimated.

5.   Significant work has been done in the assessment of water services, particularly through the water and sanitation international benchmarking network (IB-NET)[4]. However, training is needed for staff of the water utilities if these relatively sophisticated indicators are to be used on a wider geographical scale. Financing is often required to allow implementation of the data gathering and interpretation programme.

6.   Further discussion is needed on the linkage between the water service data and relevant health parameters.

7.   Authority to regulate, and responsibility to monitor, is distributed over a significant number of national authorities. The role of the Protocol focal points in understanding these

---

[4]   Further information from http://www.ib-net.org/.

different lines of authority and the associated operational processes will be crucial in establishing a sustainable reporting mechanism.

8.   The European region seems to be characterized by a great variety of approaches to water supply, from a very significant number of very small water suppliers, as in Germany, to a politically decided consolidation into a small number of major water suppliers, as in the Netherlands. Reporting mechanisms will need to be developed over time to reflect these differences.

Overview table of proposed parameters

Topic area	Proposed indicator	Mathematical expression	Unit
Drinking water coverage	WatSan_Ex1	Percentage of the population with access to safe drinking water connected to a public supply	%
Sanitation coverage	WatSan_P1	Percentage of the population served by sewerage connection	%
		Percentage of the population served by sewerage connection and wastewater treatment plant	%
		Type of wastewater treatment plant (primary, secondary, tertiary)	
Drinking water quality	WatSan_S2	Percentage of samples that fails to meet the standard for *E. coli*	%
		Percentage of samples that fails to meet the standard for enterococci	%
	WatSan_S3	Percentage of samples that fails to meet the standard for chemical water quality (10 parameters)	%
		Turbidity	NTU (nephelometric turbidity units)
Performance of drinking water supply system		Water consumption (metered)	m^3/y
		Unaccounted-for water	$m^3/km/d$
		Continuity of service	hrs of water supplied / day
		Failure rate to comply with legally required residual chlorine at point of consumption (in countries with mandatory chlorination only)	%
		Pipe breaks	Nr breaks/ km/year
Wastewater treatment	Wastewater	Volume of wastewater treated as percentage of total volume of wastewater produced	%
		Discharge of treated wastewater to nature	%
		Reuse of treated wastewater	%
Network performance		Blockages	Blockages/km/ year