

Global Environment Monitoring System for Freshwater

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Good News

- Since WSSD, five countries have revitalized their participation in GEMS/Water activities
- At the 3rd World Water Forum, the new website was unveiled
- New Pathogens 1 Database launched on 5 June, 2003
- New Analytical Methods Dictionary coming soon

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Drink to Our Health

... and to Our Aquatic Wealth

Introducing the Pathogens Project

Improved water management has brought benefits to many people in developing countries. Over the past 20 years, over 2.4 billion people have gained access to safe water supplies and 600 million have gained access to improved sanitation. However, adequate drinking water and sanitation for people are recognized as a worldwide problem, and the problem is particularly severe in rural and rapidly growing urban areas.

One out of every six people lives without regular access to safe drinking water. Worse, water-related diseases kill a child every eight seconds, and are responsible for 80 percent of all illnesses and deaths in the developing world. Half of the world's hospital beds are occupied by people suffering from water-borne diseases.

To help solve this dire situation, GEMS/Water has begun an initiative called the Pathogens Project, which involves a series of over 20 databases on the

distribution of pathogens in water sources. The first in the series, the **Pathogens 1** Database was released on June 5th.

Pathogens are disease-causing microorganisms that can enter water supplies from sources like municipal wastewater and agricultural wastes. Pathogens in surface or groundwater pose a threat to public health, and affect aquatic ecosystem health and biodiversity.

Until now, there has been little information on the distribution of viruses and pathogens, even in developed countries. Pathogens 1 is the most up-to-date and comprehensive in the world, and provides the widest range of information on water-borne pathogens in one place. The purpose of the database is to provide a baseline dataset on **more than 74 known factors** that cause disease and death, that are transmitted in water. The baseline data can be compared with information obtained locally and used as a "yardstick" for other drinking water treat-

ment facilities. This means that communities around the world can find out with greater certainty how clean their water is. This knowledge can be used in turn to determine the most appropriate methods to treat water and to monitor human

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Target Practice

How will water quality data help reach our common goals?

While the global community has pledged to halve the proportion of people without access to safe drinking water and sanitation by 2015, realizing these goals is a monumental task. UNEP reckons that **one billion** people will need help over the next 12 years.

Knowing where to start is a challenge in itself. ① First, it is vital to recognize that the global water demands implicitly need **good quality** water, not just any water availability.

② Second, these goals, and their related activities, must be **measured**. This requires enough data and information about quality and quantity of

global water resources.

③ Third, any state of the world's water assessment must be **policy relevant**. GEMS/Water plans to focus on these three steps to help the process of reaching these goals. ♦



104 countries are members of GEMS/Water (blue), but data gaps need to be filled (white)

South Africa's membership is currently being finalized.

Call for Data & Top 10 Most Wanted

GEMS/Water is seeking specific data sources

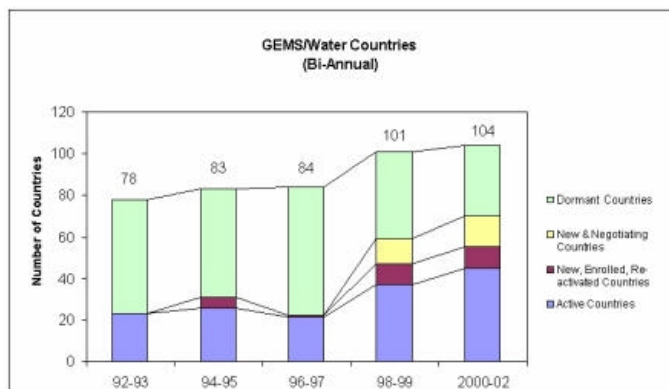
GEMS/Water relies on voluntary information exchanges with universities, governments and other data sources. GEMS/Water is looking for a wide range of water quality data on an ongoing basis. Currently, GEMS/Water seeks input and participation from all countries.

The **top 10** most wanted country participants include: Algeria · Botswana · Chad · Costa Rica · Kazakhstan · Gambia · Indonesia · Mongolia · Nigeria · Zimbabwe.

Links between national water

quality data sources and GEMS/Water global database will ensure that knowledge about clean water improves for all. To promote your country's

participation in GEMS/Water activities, e-mail Dr. Richard.Robarts@ec.gc.ca, Director, GEMS. ♦



South Africa Joins In

South Africa's new "water ladder" - viva water pure and clean...

In follow-up to the Johannesburg Summit, South Africa has developed their Free Basic Water policy into a comprehensive water and sanitation strategy with time-bound targets. This new "water ladder" hinges on implementing the National Water Quality Monitoring Programme, and membership in GEMS/Water.

Earlier this month, officials from the Department of Water Affairs and Forestry visited GEMS/Water to promote South Africa's potential with GEMS/Water, the

design of a data acquisition network that will supply relevant and reliable data, and the implementation of data into the GEMS/Water global database.

South Africa has set-up 19 water management areas covering their nine provinces, and four national laboratories. Catchment management agencies in each region monitor and analyze surface water for a comprehensive set of water quality constituents under five monitoring programs.

South Africa's vision for water and sanitation delivery is an excellent model for other countries. GEMS/Water is looking forward to welcoming South Africa as its newest member, "viva water pure and clean." E-mail Andy.Fraser@ec.gc.ca. ♦



New tool to help build knowledge for action

Drink to Health... New Pathogens 1

(Continued from page 1)
health impacts.

The Pathogens 1 Database is accessible at www.gemswater.org/publications/pathogens_database/indexe.html and illustrates the value of sharing information. The Office of Groundwater and Drinking Water of the U.S. Environmental Protection Agency gave GEMS/Water their data and in-

formation on pathogenic organisms and organics in both water sources and treated water.

The data were collected from 500 treatment plants in 290 regions in the United States.

There will be several more phases to the Pathogens Project, including at least 20 more datasets, scheduled for publication during the course of this year. E-mail

Kelly.Hodgson@ec.gc.ca, lead on Pathogens 1. ♦

Spotlight on Panama: Divided Lands, United Seas

Evaluation for the Panama Canal Authority

At the end of 2002, GEMS/Water specialists finalized a comprehensive review of the Panama Canal Authority (ACP) water quality laboratory and its operational programme. The **main goal** of the three-week long on-site assessment was to assist in the process of developing improved structures, strategies, and procedures for the benefit of the people of the Panama Canal watershed. This goal was realized by on-site observations and in-depth analy-

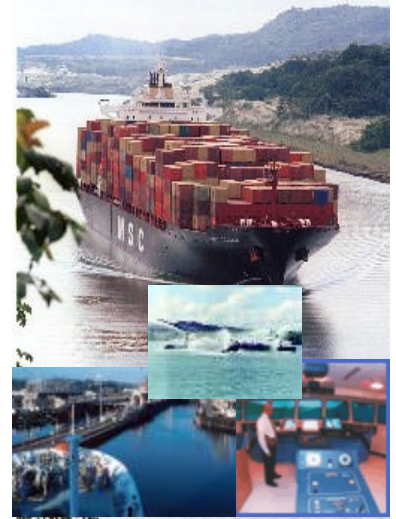
sis of water quality monitoring and related operations.

The final 80-page report includes 25 recommendations and advice designed to help the ACP fulfill its mandate of conservation and stewardship of the canal watershed.

The ACP was very pleased with the evaluation report. The evaluation is a tool for staff learning, and implementing the recommendations will help improve both the laboratory and the field operations. The exercise can be recommended to

other governments and watershed authorities.

The evaluation team was quick to commend the ACP for their cooperation and assistance, during all phases of the evaluation process. For more information, e-mail the lead assessor, Yvonne.Stokker@ec.gc.ca. ♦



Panama Canal — one of the world's engineering feats and cherished watershed

Learning about Suspended Sediment

One of 20 courses designed to build local expertise

The Research Centre on Water Resources at the National University of Nicaragua, the Institute of Nicaraguan Territorial Studies, and the Centre for Research on Contaminated Environments of the University of Costa Rica, took the GEMS/Water course "Suspended Sediment Sampling for Water Quality Management" in March of this year. The one-week course

uses **theory, practice and technology transfer** to convey program design, suspended sediment transport, spatial and temporal variability, contaminant Interactions, measurements, loads and planning a field campaign. Theoretical sessions are followed by hands-on work at a river site, and at a laboratory. After completing the course, participants plan to implement their San Juan River Basin Project, which aims to carry out a program of work that

will permit the development of a Strategic Action Plan for the long-term development and management of the river basin and its coastal zone. This includes a mass balance characterization of Lake Nicaragua, the largest freshwater lake in Central America. (See related article below.) ♦

*More about
capacity building
courses and
curricula at
www.gemswater.org*

Courses Designed for Capacity Building

GEMS/Water training centre offers a series of **20 courses**, and a new approach to training

Since capacity-building, training and development are core activities for GEMS/Water, a new series of 20 courses has been designed to meet the needs of local water quality officials and researchers. These 20 courses can be taken individually, or can be combined into modules.

The **seven modules** range from basic to highly advanced and include:

- Initiating a Monitoring Programme
- Improve Existing Monitoring Programmes
- Surface Water Quality
- Groundwater Quality
- Improving Analytical and Data Management
- Water Supply & Sanitation

- Water Quality & Regulation.

Learners who successfully complete each course receive a certificate. A course overview and curriculum will be published in the upcoming months. ♦



Extensive laboratory and field studies

Top Five Reasons to Join GEMS/Water

A frequently asked question about participating in GEMS/Water is "what are the benefits of participation?"

The short answer is, the more one participates, the more one benefits. Here are some examples:

- 1 Support governmental commitments to the work of the United Nations, including the millennium and Johannesburg goals and targets
- 2 Access information on aquatic ecosystems at regional and sub-regional levels
- 3 Access to key resources, such as the GEMS/Water Operational Guide and Digital Atlas

4 Access to QA/QC programme

5 Training and courses

And a bonus reason:

6 Laboratory assessments.

There are of course, many more benefits to joining and maintaining active involvement in global water quality monitoring at the UN level.

Visit our website, or e-mail Richard Robarts, for a complete overview of country benefits. ♦

Upcoming...

- New Analytical Methods Dictionary
- Report on Vulnerability of Water Resources to Environmental Change in Africa
- GEMS/Water Technical Advisory Group, next meeting September 2003
- Electronic Atlas of Water Quality, 2nd edition



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clean WATER is life

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Founded in 1977, the UNEP GEMS/Water Programme is renowned as the primary source for global water quality data. It is a multi-faceted water science centre oriented towards knowledge development on inland quality issues worldwide. Key activities include monitoring, assessment and capacity building. The twin goals of the programme are to improve water quality monitoring and assessment capabilities in participating countries, and to determine the status and trends of regional and global water quality.

These goals are implemented through the GEMS/Water data bank, with water quality data from more than 100 countries, and over two million entries for lakes, reservoirs, rivers and groundwater systems. GEMS/Water activities add value to country-level data by creating global and regional water quality assessments. The programme also carries out assessments on a range of water quality issues and methodologies. GEMS/Water data have been used by many organizations, including the UN system and universities around the world.

GEMS/Water is part of the Division of Early Warning and Assessment (DEWA), UNEP.

