

## Ready, Steady, Monitor!

On 18 October World Water Monitoring Day (WWMD) will be celebrated in countries all over the globe, including South Africa.

WWMD is an international education and outreach programme, which was initiated by the Water Environment Federation (WEF) and the International Water Association (IWA). The programme builds public awareness and involvement in protecting water resources around the world by engaging ordinary people, and especially school children, to conduct basic monitoring of their local water bodies.

The organisers have made available an easy-to-use kit, which enables everyone, from children to adults, to sample local water bodies for a core set of water quality parameters, including temperature, acidity (pH), clarity (turbidity) and dissolved oxygen. Following the monitoring period (18 September to 18 October) results are collected, analysed and shared with participating communities through the WWMD website ([www.worldwater-monitoringday.org](http://www.worldwater-monitoringday.org)). The timeframe for monitoring was selected to foster consistency in monitoring dates across the world.

The coordinators of this special programme hope to expand participation to a million people in 100 countries by 2012. Last year, more than 46 000 people from Argentina to Zimbabwe visited their local streams, rivers, lakes and other water bodies in

celebration of WWMD. This represented an increase of 61% over participation in 2006. The organisers hope to attract even more participants this year.

In addition to the core set of water quality parameters, some groups also tested for the presence of certain macroinvertebrates such as dragonflies, mayflies and scuds. Samples were taken in a range of settings – agricultural, commercial, residential and industrial. Some participants acted as individuals, while many took part with schools, universities, civic, environmental and faith-based groups.

Data was reported from 43 countries, with sites in the US accounting for about 63% of the 3 544 monitored worldwide. After the US, Taiwan (444) and Spain (343) led global WWMD efforts in the number of sites monitored.

The Department of Water Affairs & Forestry (DWAF) leads WWMD activities in South Africa. This year, DWAF will engage with selected schools that are participating in the 2020 Vision Programme and equip them with monitoring kits to determine the physical and microbiological quality of their tap water.

This will be done in cooperation with the responsible water service authorities since the municipality will be benefiting by having access to additional water quality information.



*On 18 October, groups around the world will come together to monitor the quality of their water resources.*

Yvonne Gounden

In addition, the department reports that 18 October has also been set up as D-day for water service authorities to have water sampling programmes in place as is required by the Water Services Act. "It is the legislated duty of water service authorities to have sampling programmes in place in order to ensure that the quality of drinking water supplied to the public by means of formal reticulation, complies with the National Standard," DWAF said in a statement.

## SOUTH AFRICA'S RIVER HEALTH PROGRAMME

South Africa has had a national programme in place since 1994 to assess the health of its rivers, namely the River Health Programme (RHP). The RHP, which is a collaborative effort between the Department of Water Affairs & Forestry, the Department of Environmental Affairs & Tourism, and the Water Research Commission (WRC), assesses the biological and habitat integrity of rivers. This is done through the evaluation of, among others, fish, aquatic invertebrates and riparian vegetation.

This assessment enables reports on the ecological state of the river system to be produced in an objective and scientifically sound manner. Information from the RHP assists with identification of those areas where unacceptable ecological deterioration is taking place. In addition, this programme reflects the effectiveness of existing river management policies, strategies and actions

Apart from the two national government departments and the WRC, a variety of organisations within each province implement the River Health Programme at a local level. The following state-of-the-river reports have been completed to date, and can be downloaded from the RHP website ([www.csir.co.za/rhp](http://www.csir.co.za/rhp)): Gouritz water management area; Mokolo River; Olifants, Doring and Sandveld rivers; Greater Cape Town rivers; Crocodile (West) Marico water management area; Buffalo River System; Berg River System, Free State region; Diep, Hout Bay, Lourens and Palmiet river system; Umgeni River, Letaba and Luvuvhu rivers, and Crocodile Sabie-Sand & Olifants rivers.



## WATER QUALITY PARAMETERS



**Dissolved oxygen:** Aquatic organisms such as zooplankton, invertebrates and fish require sufficient levels of dissolved oxygen (DO) to survive. The amount of DO in the water is a factor in determining the species and abundance of organisms that can live in a river, stream or estuary.

**Temperature:** Temperature is a critical factor in determining where aquatic organisms live and how well they thrive there. Growth rates of aquatic plants and cold-blooded animals generally increase with temperature, up to the thermal optimum. Shifts in temperature cause variation in, for example, phytoplankton abundance and species composition. Temperature also affects the solubility of oxygen in the water, which is critical for the survival of aquatic organisms. As water temperature increases, the solubility of oxygen decreases.

**Acidity (pH):** Solutions with a pH less than 7 are acidic, and those with pH greater than 7 are basic (alkaline). Knowledge of pH is important because most aquatic organisms are adapted to live in pHs between 5.0 and 9.0.

**Turbidity:** Turbidity is a measure of the ability for light to transmit down through the water column. As suspended solids increase in the water, the amount of light travelling through the water column is reduced. This can influence the populations of organisms that are directly dependent upon light (phytoplankton and aquatic plants) and those, in turn that are dependent upon them as a food source. Suspended solids include particles of algae, sediment, debris or solid waste. Turbidity affects fish and other aquatic life by: a) limiting photosynthetic processes and increasing respiration, oxygen use and the amount of carbon dioxide produced; b) clogging of fish gills and feeding apparatus of bottom dwelling animals by suspended particles; and/or obscuring vision of fish as they hunt food and smothering bottom-dwelling animals.