

Has monitoring failed the Olifants River, Mpumalanga?

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Abstract

Water quality monitoring in the Olifants River catchment, Mpumalanga, is evaluated using river water dissolved sulphate levels, one of the best indicators of pollution related to acid mine drainage. Assessment of long-term water quality records shows that monitoring has not been carried out systematically. In that it fails one of the most fundamental criteria of good environmental monitoring practices. At some monitoring stations sampling frequency has been scaled down from approximately weekly to monthly intervals over time, despite evidence for increasing and problematic levels of pollution. At the Loskop Dam dissolved sulphate levels have increased more than 7-fold since the 1970s evidently due to increasing levels of pollution within the Little Olifants River catchment. At 4 of the 7 long-term monitoring stations river water sulphate levels exceed the 100 mg/l threshold value for aquatic ecosystem health most of the time for the duration of the record, and all of the time since about 2001. At these stations river water sulphate levels also exceed the 200 mg/l threshold for human consumption 27 to 45% of the time, for the duration of the long-term record. These observations necessitate more frequent and improved monitoring, not evidently reduced efforts. A major concern is the location of a recently re-opened copper mine outside Phalaborwa, just upstream from the confluence of the Ga-Selati River and the Olifants River. Levels of copper sulphate, highly toxic to aquatic species, should be urgently investigated as a probable cause of recent fish and crocodile deaths in the Kruger National Park. In river systems subject to intensive mining activity, such as the Olifants River, toxic constituents such as copper, arsenic, chrome-VI, etc., currently not routinely measured by the Department of Water Affairs (DWA) need to be included in monitoring efforts as a matter of urgency. This will require drastic improvements in current water quality monitoring efforts, including the acquisition of modern analytical instrumentation.

Keywords: Olifants River, Mpumalanga, dissolved sulphate, monitoring