



# Environment in Iraq: UNEP Progress Report

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## 1. Introduction

As major military operations in Iraq were drawing towards an end in late April 2003, UNEP published its *Desk Study on the Environment in Iraq*, aimed at providing a timely overview of key environmental issues in the context of the recent conflict. Background materials used in the report's preparation relied on UNEP's earlier work in the region, including three studies it had carried out about the environmental impacts of the 1991 Gulf War, and the 2001 report on the demise of the Mesopotamian Marshlands. Due to the conflict situation, it was not possible to conduct field assessments and the study was rapidly compiled from published and on-line information sources as well as satellite data. Despite these limitations, the report sets out the general environmental context and provides guidance on the next steps for addressing key environmental challenges. UNEP's Desk Study was prepared as part of the overall 'UN Humanitarian Flash Appeal for Iraq', launched in March 2003.

This Progress Report should not be considered as a substitute for the Iraq Desk Study, but is intended to provide updated information about the evolving environmental situation in Iraq, with a view to highlighting priority areas for action. In addition to other sources, it draws its information from two fact-finding missions that UNEP was able to field to Iraq in July and August 2003. Unfortunately, however, the security front remains unstable, seriously curtailing the United Nations margin of manoeuvre in Iraq.

The Progress Report also makes use of background material collected for the United Nations Development Group (UNDG) / World Bank Joint Iraq Needs Assessment, which will be presented at the International Donors' Conference in Madrid on 24 October 2003. Within the UNDG process, UNEP has been mandated to identify and evaluate environmental concerns; one of the four cross-cutting sectors of the Iraq Needs Assessment. This has provided an opportunity for UNEP to actively link environmental activities with other relevant sectors such as agriculture, water and sanitation, energy, housing and institutions.

While, the occupying powers represented by the Coalition Provisional Authority (CPA) hold the dominant political role, the Iraqi people are currently represented by the Iraqi Governing Council, which named a cabinet of 25 ministers on 1 September 2003. In this cabinet, a new seat for an environment minister has been created for the first time. One of the areas where the international community can play a major role is to assist in building the capacity of this nascent environmental administration. In so doing, the enormous task of managing the environmental challenges in post-conflict Iraq can be addressed in a long-term and sustainable manner.

Based on the earlier *UNEP Desk Study on the Environment in Iraq*, the UNDG needs assessment, and this progress report on environment, UNEP concludes that there are a number of serious environmental problems in Iraq that require immediate attention. These include environmental contamination exacerbated by military actions as well as looting of sites holding nuclear and toxic materials. Iraq has also long-standing environmental problems, such as the destruction of the Mesopotamian Marshlands and pollution from the oil and chemical industries.

Since May 2003, UNEP has hosted five roundtable meetings on the environment in Iraq in Geneva, Switzerland. There has been wide participation in these meetings by different UN agencies, non-governmental organizations, scientific and academic institutions and development agencies. These roundtables have provided a forum for different stakeholders to coordinate their activities and to inform each other on the development and progress of different programmes and projects in Iraq.

With this progress report, UNEP's aim is to inform all stakeholders about recent environmental developments in Iraq. The report includes recent information and examples of industrial pollution 'hotspots' that need to be scientifically assessed and, depending on the results, cleaned up as quickly as possible. It also contains an



update on developments in the Mesopotamian Marshlands and describes the former and current environmental administration in Iraq, as well as the UNDG process. Next steps for action include strengthening national environmental institutions, promoting regional environmental cooperation and implementing environmental rehabilitation and clean-up projects.

## 2. Environmental priority sites

### 2.1 Overview

UNEP's Post Conflict Assessment Unit (PCAU) prepared a Desk Study of the environment in Iraq in April 2003, aimed at providing a rapid and timely overview of key environmental issues in the context of the current conflict. Attention was drawn to possible next steps, including urgent measures to minimize, mitigate and remediate immediate environment-related threats to human health. One important step is to identify the major polluted and contaminated areas that have the potential to threaten human health and the environment, and to provide recommendations for risk reduction and remediation. The Desk Study began this process by listing known sites where chemical weapon attacks occurred during the Iraq-Iran war, as well as military sites that were bombed during the 1991 Gulf War. It also drew attention to the need to collect further information on ammunition detonation sites as well as potential contamination from the use of depleted uranium ammunition.



Newly identified industrial sites and sectors of concern in Iraq

Since the publication of the Desk Study, UNEP has been identifying potentially contaminated sites on the basis of fact-finding missions undertaken in July and August 2003, desk research, satellite images, and information provided by Iraqi government officials and affiliated UN organizations. This section focuses on the new information that has been collected since April 2003 on potential industrial 'hotspots', oil contamination, pollution from shipwrecks, waste management, water and sanitation issues, and contamination from depleted uranium.

## 2.2 Contaminated industrial sites

Iraq's industry has suffered from a decade of economic sanctions and lack of investment. This has led to chronic environmental problems, such as discharges of untreated effluent to surface waters, spillages and discharges of chemicals to soils and groundwater, and widespread uncontrolled emission of particulates and gases from stacks. The recent war has undoubtedly exacerbated the chronic environmental stresses that have accumulated in Iraq over the past two decades. An important part of the environmental damage associated directly with the war arises from the looting and pillaging of key infrastructures and the ransacking of equipment and supplies, including hazardous and radioactive materials.

UNEP is currently identifying industrial sites that may pose significant risks to human health and lead to further environmental degradation. The site identification, review and prioritization process is ongoing and, hence, these initial priority sites described in this section may be subject to review and amendment. Several polluted industrial sites that need urgent clean-up measures are described and divided into specific *contaminated sites* and more general *industrial sectors with contaminated sites*.

### Contaminated sites

#### Al-Mishraq Sulphur State Company

The Al-Mishraq Sulphur State Company, located 30 km south of Mosul, conducts sulphur mining and comprises a sulphuric acid and an aluminium sulphate plant, as well as supporting infrastructure. Mining of sulphur began at Al-Mishraq in 1972 and by 1988 production capacity was about 1.25 million tonnes per year. The sulphur is mainly stored in loose stockpiles.

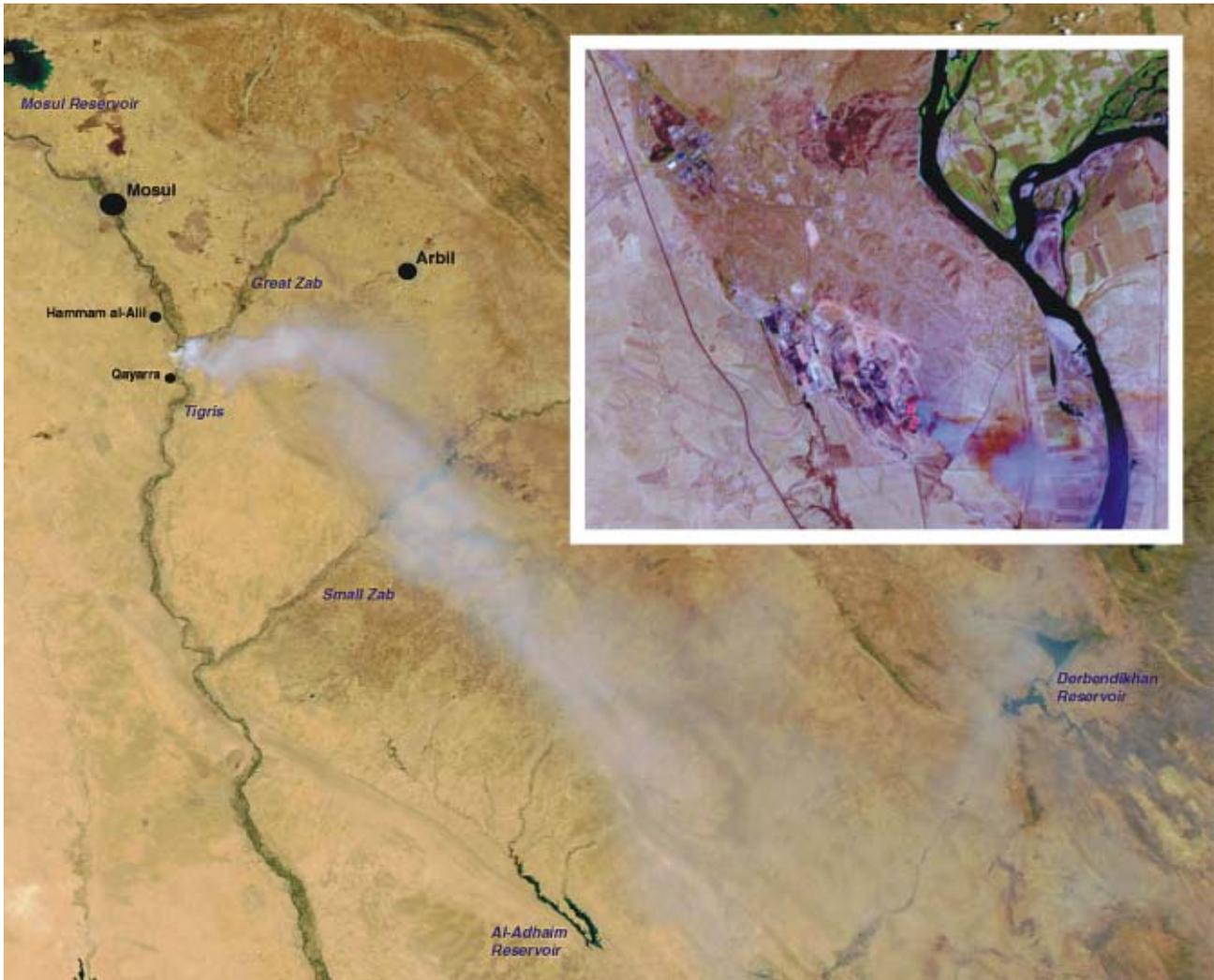
On 26 June 2003, it was reported that the Al-Mishraq sulphur plant was burning, emitting a huge plume of gas over Iraq and other Middle Eastern countries. It is not yet known whether this was an act of sabotage or caused by an accident in the production process. Although not confirmed by laboratory analysis it is likely that the visible plume was generated by the reaction of the primary combustion product (sulphur dioxide) with sunlight, oxygen, dust particles and water in the air to form a mixture of sulphate ( $\text{SO}_4^{2-}$ ) aerosols (tiny particles and droplets), sulphuric acid ( $\text{H}_2\text{SO}_4$ ), and other oxidized sulphur by-products. On the basis of satellite images it is clearly indicated that the fire took place at the mining and milling area.

The extent of the plume appeared to peak between 29 June and 1 July, however, it was reported that the fire had been extinguished by 25 July using bulldozers, fire trucks and other fire fighting equipment. It was also reported that the mounds of elemental sulphur turned molten in the intensity of the fire and had threatened to impact the Tigris River.

According to local media reports, the persistent plume has caused significant environmental impacts and health impacts, such as respiratory distress and skin irritations among the local population. The UNEP Fact Finding Mission of July 2003 confirmed the concerns of local people about the ongoing sulphur burning at the Al-Mishraq plant. Local experts estimated that in the region of 0.5 million tonnes of sulphur (0.5–1 million tonnes according to Ministry of Industry and Minerals) were destroyed during the approximately one month that the fire burned, affecting a wide area extending from Al-Sharqat to Mosul and Erbil. In addition, the impact of contaminated firewater and potential run-off into the Tigris has not been determined.

UN agencies were monitoring potential health and environmental concerns arising from the high concentrations of sulphur dioxide in the air. The major health concern associated with exposure to high concentrations of sulphur dioxide includes breathing problems, respiratory illnesses and alterations in pulmonary defences. Exposure causes eye, nose, throat and skin irritations and other ailments, especially for people with allergies. The impact that sulphur dioxide has on the surrounding environment is also of great concern. More than 40 percent of trees in a radius of 100 km from the sulphur plant have already lost their leaves. There is an urgent need to comprehensively assess the health and environmental impacts of this incident.

### Massive sulphur dioxide plume from a fire eruption at the Al-Mishraq State Company



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