3 Special Study Areas

INTRODUCTION

Chemical data collected for groundwaters from the National Hydrochemical Survey give useful information about the inorganic groundwater quality and the regional variations but interpretation is limited by the range of determinands analysed. More detailed analysis of the national survey samples, including anion, trace element and isotopic analysis, was beyond the scope of the project. However, these parameters are of great potential value in assessing hydrogeochemical processes in the aquifers and for this reason, three Special Study Areas were chosen in which to carry out more detailed groundwater chemical analysis. These study areas were also the focus of mineralogical and sediment chemistry investigations, groundwater monitoring and flow modelling. The areas chosen were the headquarter (sadat) upazilas of the Districts of Lakshmipur, Faridpur and Nawabganj. Samples were also collected from Shibganj, the neighbouring upazila to Chapai Nawabganj headquarter upazila (Nawabganj District) and Chatkhil (neighbouring upazila to Lakshmipur headquarter upazila). The areas were selected as they have recognised arsenic problems, are distributed widely across the alluvial and deltaic plain of Bangladesh in different sections of the Bengal drainage system and have differing geological and hydrogeological characteristics.

Details of the sampling and analytical methods and a discussion of the data are given in Chapter 7 (Hydrogeochemistry of three Special Study Areas) of the Main Report.
LOCATION OF SPECIAL STUDY AREAS

Chapai Nawabganj
Faridpur
Lakshmipur

Groundwater Studies of Arsenic Contamination in Bangladesh
BGS/DPHE/DFID (2000)
SAMPLE ID’S

"Groundwater Studies of Arsenic Contamination in Bangladesh"
BGS/DPHE/DFID (2000)
**GEOLOGY**

*Groundwater Studies of Arsenic Contamination in Bangladesh*
BGS/DPHE/DFID (2000)
DEPTH OF WELLS

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BGS/DPHE/DFID (2000)
ALKALINITY

"Groundwater Studies of Arsenic Contamination in Bangladesh"
BGS/DPHE/DFID (2000)
AMMONIUM

NH$_4$-N mg L$^{-1}$
- <0.05
- 0.05-0.4
- 0.4-1.5
- 1.5-3.0
- >3.0

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ARSenic (TOTAL)

'*Groundwater Studies of Arsenic Contamination in Bangladesh*
BGS/DPHE/DFID (2000)
ARSENIC (As(III))

'Groundwater Studies of Arsenic Contamination in Bangladesh'
BGS/DPHE/DFID (2000)
Arsenic contamination of groundwater in Bangladesh

**Barium**

![Map of Bangladesh showing barium concentrations in groundwater](image)

- **Chapai Nawabganj town**
- **Faridpur**
- **Lakshmipur**

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BGS/DPHE/DFID (2000)
Boron

B mg L⁻¹

<0.03
0.03-0.05
0.05-0.1
>0.1

Groundwater Studies of Arsenic Contamination in Bangladesh
BGS/DPHE/DFID (2000)
Bromide

BGS/DPHE/DFID (2000)
'Groundwater Studies of Arsenic Contamination in Bangladesh'
CALCIUM

\[
\begin{array}{c|c|c|c|c|c}
Ca & mg L^{-1} \\
\hline
<60 & 60-90 & 90-120 & >120 \\
\end{array}
\]

'Special Study Areas'

Groundwater Studies of Arsenic Contamination in Bangladesh
BGS/DPHE/DFID (2000)
CHLORIDE

'Groundwater Studies of Arsenic Contamination in Bangladesh'
BGS/DPHE/DFID (2000)