LIST OF TABLES

Table 1.1 Fluoride containing minerals
Table 1.2 Fluoride concentrations of rocks
Table 1.3 Fluoride concentration in groundwater of India
Table 1.4 Guidelines for fluoride in drinking water
Table 1.5 Treatment options for defluoridation by precipitation
Table 1.6 Treatment options for defluoridation by ion exchange/adsorption
Table 1.7 Treatment options for defluoridation using other methods
Table 2.1 Lowercase letter symbols to designate subordinate distinctions with master horizons
Table 2.2 Major features of diagnostic horizons in mineral soils used to differentiate at the higher levels of Soil Taxonomy
Table 2.3 Soil orders and suborders in Soil Taxonomy
Table 2.4 Formative elements in names of suborders in Soil Taxonomy
Table 2.5 Formative elements for names of great groups and their connotation
Table 2.6 Commonly used examples of particle size, mineralogy and soil temperature used to differentiate families
Table 2.7 Typical unit layer formulas of several clays and other silicate minerals showing octahedral and tetrahedral cations as well as co-ordinating anions, charge per unit formula, and fixed and exchangeable interlayer components
Table 3.1 Chemical treatment given to silty clay fractionated from Dayalbagh soil (SCF)
Table 3.2 (a) Experimental details of fluoride sorption by composite soil of Agra
(b) Experimental details of fluoride sorption by composite soil of Dayalbagh
(c) Experimental details of fluoride sorption by Dayalbagh soil and its fractions
(d) Experimental details of fluoride sorption by montmorillonite (H⁺ form) and kaolinite
(e) Experimental details of fluoride sorption by montmorillonite (Na⁺ form)
(f) Experimental details of fluoride sorption by chemically amended silty clay fraction of Dayalbagh soil
Table 3.3 Experimental Parameters of XRD Analysis
Table 3.4 Guide to quantity of an ethanol - glycerol solution (10% glycerol by volume) needed to solvate various size fractions
Table 4.1 Equilibrium fluoride values of spiked water samples at: nil (°), 50% (°) and 80% (°) sample dilutions
Table 4.2 Recovery of fluoride employing TISAB sub IV from spiked water samples adjusted to pH ≈ 4 and ≈ 9

(III)
Table 4.3 Recovery of fluoride employing TISAB\textsubscript{TRIS, III} from spiked water samples adjusted to pH ≈ 4 and ≈ 9

Table 4.4 Physico-chemical characteristics of the soil samples collected from selected sites of Agra

Table 4.5 Variation in percentage fluoride sorption and liquid phase concentration of (i) F, (ii) K, (iii) Ca and (iv) Mg for composite soil of Agra as a function of agitation period and [F\textsubscript{initial}]

Table 4.6 XRD data revealing major basal spacings (Å) and phase interpretation of clay fractionated from Dayalbagh soil

Table 4.7 Fluoride sorption by composite soil of Dayalbagh as a function of pH and agitation period

Table 4.8 Data of fluoride sorption by composite soil of Dayalbagh at varying pH

Table 4.9 Data on fluoride sorption by composite soil of Dayalbagh recorded as a function of pH and [F\textsubscript{initial}]

Table 4.10 Data on fluoride sorption by composite soil of Dayalbagh recorded as a function of pH and [F\textsubscript{initial}]

Table 4.11 Freundlich constants for fluoride adsorption by composite soil of Dayalbagh at varying pH

Table 4.12 Langmuir constants for fluoride adsorption by composite soil of Dayalbagh as a function of pH

Table 4.13 Water soluble fluoride concentration in composite soil (CS), sand fraction (SF) and silty clay fraction (SCF) of Dayalbagh soil

Table 4.14 Variation in percentage fluoride sorption by CS, SF and SCF as a function of pH, agitation period and [F\textsubscript{initial}]

Table 4.15 XRD data revealing major basal spacings (Å) and phase interpretation of montmorillonite (H\textsuperscript{+} form)

Table 4.16 XRD data revealing major basal spacings (Å) and phase interpretation of montmorillonite (H\textsuperscript{+} form) adjusted to pH ≈ 4

Table 4.17 XRD data revealing major basal spacings (Å) and phase interpretation of montmorillonite (H\textsuperscript{+} form) adjusted to pH ≈ 10

Table 4.18 Fluoride sorption by montmorillonite (H\textsuperscript{+} form) as a function of pH

Table 4.19 Data on fluoride sorption by montmorillonite (H\textsuperscript{+} form) at varying pH

Table 4.20 Concentration of Al\textsuperscript{3+}, Fe\textsuperscript{3+} and dissolved silica in supernate obtained after fluoride sorption by montmorillonite (H\textsuperscript{+} form)

Table 4.21 Data on fluoride sorption by montmorillonite (H\textsuperscript{+} form) recorded as a function of pH and [F\textsubscript{initial}]

Table 4.22 Freundlich constants for fluoride adsorption by montmorillonite (H\textsuperscript{+} form) at varying pH

Table 4.23 Data on fluoride sorption by montmorillonite (H\textsuperscript{+} form) recorded as a function of pH and [F\textsubscript{initial}]

(IV)
Table 4.24 Data on fluoride sorption by montmorillonite (H\textsuperscript{+} form) recorded as a function of pH and [F\textsubscript{initial}]
Table 4.25 Range and mean of released Al\textsuperscript{3+} concentration (mg/L) as a function of pH\textsubscript{initial} for montmorillonite (H\textsuperscript{+} form)
Table 4.26 XRD data revealing major basal spacings (\textdegree{}A) and phase interpretation for kaolin
Table 4.27 Data on fluoride sorption by kaolinite as a function of pH
Table 4.28 Data on fluoride sorption by kaolinite at varying pH
Table 4.29 Fluoride sorption by kaolinite recorded as a function of clay amount and [F\textsubscript{initial}]
Table 4.30 XRD data revealing major basal spacings (\textdegree{}A) and phase interpretation for montmorillonite (Na\textsuperscript{+} form)
Table 4.31 Data on fluoride sorption by montmorillonite (Na\textsuperscript{+} form) as a function of clay amount and pH
Table 4.32 Fluoride sorption by unamended/amended silty clay fraction (SCF) and accompanying pH changes
Table 4.33 Fluoride sorption by unamended/amended silty clay fraction (SCF) and accompanying pH changes as a function of pH
Table 4.34 Increase in pH vs. fluoride sorbed as a function of [F\textsubscript{initial}]
Table 4.35 Data on fluoride sorption by unamended/amended silty clay fraction as a function of sorbent amount
Table 4.36 The variation in pH and fluoride sorbed as a function of agitation period