

WATER QUALITY & STANDARDS

Dr. Moazzam Ali Khan



AESTHETIC CONSTITUENTS



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- Aluminium
- Chloride
- Colour
- Copper
- Hardness
- Hydrogen sulphide
- Iron
- Manganese
- Oxygen
- pH
- Sodium
- Sulphate
- Taste and Odour
- Temperature
- Total dissolved solids
- Turbidity

HEALTH RELATED PARAMETERS

- **INORGANIC PARAMETERS**
- **ORGANIC PARAMETERS**
- **BIOLOGICAL PARAMETERS**

INORGANIC PARAMETERS

ASBESTOS

OCCURRENCE

Found in domestic water supply

ROUTE OF EXPOSURE

No reliable figures reported/available

HEALTH EFFECTS

- i. Only animal data available
- ii. No definite association between cancer and asbestos

INORGANIC PARAMETERS

ARSENIC

OCCURRENCE

Industrial source

ROUTE OF EXPOSURE

Water soluble Tri and Pentavalent have been identified in water

HEALTH EFFECTS

- i. CNS, GIT, Respiratory tract ailments
- ii. Loss of appetite , nausea

INORGANIC PARAMETERS

CADMIUM

OCCURRENCE

Industrial source

Galvanized iron piping

Soft water and low pH encourage Cd contamination

ROUTE OF EXPOSURE

A very low quantity in drinking water

HEALTH EFFECTS

- i. Effects on kidney and urinary system
- ii. Itai itai

INORGANIC PARAMETERS

CHROMIUM

OCCURRENCE

Industrial source

Low solubility

ROUTE OF EXPOSURE

Trivalent Cr rarely occurs in water

Water borne Cr is hexavalent

HEALTH EFFECTS

- i. Cr VI affects liver and kidney

INORGANIC PARAMETERS

CYANIDE

OCCURRENCE

Industrial source

Chlorination converts cyanide into cyanate (less toxic)

ROUTE OF EXPOSURE

Information/ data in drinking water not available

HEALTH EFFECTS

- i. 50-60 mg fatal

INORGANIC PARAMETERS

FLUORIDE

OCCURRENCE

Traces occur in water

Higher in underground sources

ROUTE OF EXPOSURE

Levels are same as in source water except where fluoridation is applied

HEALTH EFFECTS

- i. Important for reduction in dental caries
- ii. Excess causing mottling of teeth
- iii. High dose (5 g as NaF) acutely toxic for man

INORGANIC PARAMETERS

HARDNESS

OCCURRENCE

Ca and mg salts

ROUTE OF EXPOSURE

Raw water hardness is similar to drinking water

HEALTH EFFECTS

- i. No evidence that hardness in water causes ill effects
- ii. It protects (prevents) against cardiovascular problems

INORGANIC PARAMETERS

LEAD

OCCURRENCE

Industrial sources

Lead pipes and equipment containing Pb

ROUTE OF EXPOSURE

Soft water dissolves Pb at low pH

HEALTH EFFECTS

- i. CNS involvement
- ii. Low IQ levels

INORGANIC PARAMETERS

MERCURY

OCCURRENCE

Industrial pollution

ROUTE OF EXPOSURE

Extremely low level (0.0002 mg/l) is present

HEALTH EFFECTS

- i. Neurological and renal disturbance

INORGANIC PARAMETERS

NITRATE and NITRITE

OCCURRENCE

Soils, plants, most water, fertilizer, biological conversion

ROUTE OF EXPOSURE

Nitrite is oxidized to nitrate due to chlorination

HEALTH EFFECTS

- i. Methemoglobinemia
- ii. Carcinogenicity of nitrosoamines

ORGANIC PARAMETERS

POLY NUCLEAR AROMATIC HYDROCARBON (PAH)

OCCURRENCE

Formed due to incomplete consumption of organic compounds

ROUTE OF EXPOSURE

Widely distributed in environment including water resources

HEALTH EFFECTS

- i. No information on toxicity, effect on skin**
- ii. Mutagenic, carcinogenic in animals**

ORGANIC PARAMETERS

TRICHALOMETHANE

OCCURRENCE

Formed as result of chlorination

ROUTE OF EXPOSURE

Through water disinfected with chlorine

HEALTH EFFECTS

- i. CNS depressant
- ii. Affects liver and kidney

BIOLOGICAL PARAMETERS

ORGANISMS

Salmonella typhi

Shigella spp.

Yersinia spp

Vibrio cholerae

Campylobacter jejuni

Escherichia coli

(pathogenic strain)

DISEASE

Typhoid fever

Bacillary dysentery

Acute gastroenteritis

Cholera

Gastroenteritis

Gastroenteritis

BIOLOGICAL PARAMETERS

ORGANISMS

Cryptosporidium

Entamoeba histolytica

Giardia lamblia

Balantidium coli

Toxoplasma

DISEASE

Gastroenteritis

Acute enteritis

Giardiasis

Diarrhoea and

dysentery

Toxoplasmosis

BIOLOGICAL PARAMETERS

ORGANISMS

Ascaris lumbricoides

Ascaris suum

Trichuris trichiura

Taenia saginata

DISEASE

Digestive and nutritional disturbances, abdominal pain, vomiting and restlessness

Coughing, chest pain and fever

Abdominal pain, diarrhea, anemia, weight loss

Nervousness, insomnia, anorexia, abdominal pain, Digestive disturbances