Beware of fluoride in water

- **Do people in communities you work with suffer from joint pains?**
- **Or have discoloured teeth?**
- **Do you know that drinking water supplies could be to blame?**

Read on to find out how fluoride in drinking water may affect you, and what you can do about it.

What you need to know?

Fluorine is a highly-reactive element that is found in a number of commonly-occurring rocks. It occurs naturally in some groundwater sources and in a range of different food items that have been grown or produced using water with high fluoride content.

The ingestion of large amounts of fluoride, whether via water or food, can cause serious health problems for humans and animals. These range from discoloured teeth (i.e. dental fluorosis) to aching joints, brittle bones, stunted growth and deformed limbs (i.e. skeletal fluorosis). Non-skeletal fluorosis can also have severe symptoms. These include gastro-intestinal problems and neurological disorders. Fluoride can damage unborn babies and adversely affect the intelligence of children. As it can affect the pelvic bones, pregnant women often have to undergo caesarean operations.

Drinking water is considered harmful if it contains more than 1.5 mg/l fluoride. Because fluoride accumulates in the body, people most at risk are those who do hard work and therefore consume more water than others on a daily basis, or if food contains a lot of fluoride. Poor people are often worst affected by fluorosis due to poor nutrition.

Fluoride in drinking water mg/l	Effects
Below 1.0	Safe
1.0-1.5	Marginal
1.5-3.0	High risk of dental fluorosis
3.0-10.0	Leads to skeletal fluorosis with adverse changes in bones
More than 10.0	Crippling skeletal fluorosis

How do you know if people are affected? It is easy to recognise dental fluorosis from discoloration of teeth. People affected by skeletal fluorosis may not be able to touch their toes without bending the knees, or bend their chin onto the chest.

What can people do?

To reduce intake of fluoride people in affected areas should avoid:

- drinking water from sources containing more than 1.5 mg/l fluoride
- use of fluoride toothpaste
- smoking and chewing of tobacco
- chewing gum
- using paanparag
- drinking too much tea

The symptoms of fluorosis may also be alleviated by:

- drinking more milk to provide calcium to strengthen bones
- eating fruits (especially citrus, alma, tamarind) and vegetables to increase vitamin C intake

Water can also be treated to reduce fluoride levels using filters that can be bought commercially, or using simple household methods like the Nalgonda technique (see box).

Fluoride levels are very variable. One well may contain high levels while a nearby well contains little. Unfortunately the best quality water in many villages is used for irrigation. Fluoride levels increase when groundwater levels fall during drought, or because of over-pumping for irrigation.

Box: Simple treatment for flouride

To treat water for fluoride at moderate concentrations all you need is: alum that can purchased for Rs15 per kg (this will last for 2 months or so), lime paste and bleaching powder.

After washing your hands (using soap) take a handful of alum, While holding the alum in your hand, put your hand in the water and swirl your hand fast around the bucket for one minute. Take out the alum and keep it in a clean container for use next time. Then add a pinch of lime paste to the water, and a pinch of bleaching powder to kill any bacteria. Allow the water to stand for one hour while the fluoride settles to the bottom.

Using a tumbler, transfer the water into another pot without disturbing the sediment. Throw away the sediment safely, and clean the pot before using it again.

Where to get more information and help?

Mytry Social Service Society (near Canara Bank, Anantapur) sell subsidised fluoride filters costing Rs 1700-2000 that use activated alumina technology – that is more effective that the simple Nalgonda technique.

To test water supplies for fluoride a sample of water may be taken to the Chemical Laboratory of the Rural Water Supply Department in Anantapur. It should be possible to get results within a week.

Summary

The health of people is severely at risk from drinking water containing high levels of fluoride. But you can act. Encourage people to avoid unsafe drinking water sources if you can, or to treat water to reduce the fluoride levels.

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or see WHIRL project website at

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WHiRL

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