

ENVIRONMENTAL HEALTH FACT SHEET

No. 409

ARSENIC IN DRINKING WATER

WHERE DOES IT COME FROM?

Arsenic is a naturally occurring element that is widely distributed in the earth's crust. Arsenic compounds are used commercially in the manufacture of a variety of products such as transistors, lasers, semiconductors, glass production, pigments, textiles, paper, ceramics, wood preservatives, explosives and pesticides.

There are two forms of arsenic - organic and inorganic. Organic arsenic occurs naturally in many types of food including cereals, vegetables and especially seafood. Inorganic arsenic is found naturally in soil and rock from where it can enter groundwater. When consumed, arsenic is quickly eliminated by the body, with most being excreted within 3 days. With exposure to high levels over prolonged periods inorganic arsenic in drinking water can pose a serious risk to health.

HOW DOES ARSENIC GET INTO DRINKING WATER?

Drinking water can be contaminated with inorganic arsenic by windblown dust, leaching or runoff from soil, rocks and sediment. Groundwater sources such as bores are usually at a greater risk of containing inorganic arsenic than surface or rainwater supplies.

AUSTRALIAN DRINKING WATER GUIDELINES 2004 (ADWG)

The Australian Drinking Water Guidelines (ADWG), developed by the National Health and Medical Research Council (NHMRC) provide health and aesthetic guideline values for chemical, physical and radiological water quality characteristics and assure the safety of drinking water. A health guideline value is the concentration or measure of a water quality characteristic that, based on present knowledge, does not result in any significant risk to the health of consumers over a lifetime of consumption.

HEALTH GUIDELINE VALUE FOR ARSENIC

Under the ADWG, a health guideline value of 7 µg/L for arsenic has been set to protect public health. The World Health Organisation have a slightly higher guideline value of 10 µg/L.

WHAT ARE THE POSSIBLE HEALTH EFFECTS?

Continued high exposure to arsenic over many years can cause decreased production of red and white blood cells, damage to blood vessels and a sensation of "pins and needles" in the hands and feet.

Effects that have been attributed to long term exposure to arsenic in drinking water include increased risk of skin lesions, skin cancer, vascular disease, effects on the nervous system and possible cancer of other organs.

If you have consumed water that has been contaminated by arsenic the potential affect on your health will depend on the following:

- How much arsenic you have been exposed to;
- How long and how often you were exposed;

- Your health, nutritional status, age and lifestyle.

HOW CAN I TELL IF I HAVE ARSENIC IN MY DRINKING WATER?

You cannot taste, smell or see arsenic in drinking water. The only way to know if your water contains arsenic is to have it professionally tested.

HOW DO I TEST FOR ARSENIC IN DRINKING WATER?

Water testing for arsenic can be done by the Northern Territory Environmental Laboratory (NTEL). Check with the laboratory first to find out how to collect and transport your water sample.

IF MY LEVEL OF ARSENIC IS ABOVE THE ADWG WHAT CAN I DO?

Drink bottled water, carted water, or rain water until your water quality can be assured through confirmatory testing and seeking expert advice. It is possible to reduce the level of arsenic in your household drinking water supply by using a variety of treatment processes.

HOW CAN I REDUCE MY EXPOSURE TO ARSENIC?

If your water supply contains elevated levels of arsenic do not drink or prepare any food with it. Any arsenic you may have consumed by drinking water with elevated levels is excreted quickly and naturally from the body when you stop drinking the affected water.

WHAT CAN I USE MY WATER FOR IF IT IS CONTAMINATED BY ARSENIC?

Arsenic is not easily absorbed through the skin. Water contaminated by arsenic can still be used for hand washing, bathing, washing clothes and irrigating the garden. However care should be taken when irrigating root vegetables such as turnips, carrots, beetroot and potatoes as they can concentrate arsenic in their skin.

Care should also be taken to ensure pets and other animals do not drink contaminated water.

WHAT IF I HAVE HEALTH CONCERNS?

If you require health advice please contact the Centre for Disease Control on 1800 008 002.

CONTACT ENVIRONMENTAL HEALTH ON 1800 095 646 OR YOUR LOCAL OFFICE

<p>GREATER DARWIN REGION & DARWIN RURAL 2nd Floor, Casuarina Plaza Casuarina PO Box 40596 CASUARINA NT 0811 Phone: (08) 8922 7377 Fax: (08) 8922 7036</p>	<p>KATHERINE Ground Floor, O'Keefe House Katherine Hospital PMB 73 KATHERINE NT 0851 Phone: (08) 8973 9061 (08) 8973 9062 Fax: (08) 8973 9063</p>	<p>EAST ARNHAM Community Health Building Endeavour Square, Nhulunbuy PO Box 421 NHULUNBUY NT 0881 Phone: (08) 8987 0440 (08) 8987 0441 Fax: (08) 8987 0444</p>
<p>BARKLY Health Development Building Cnr Schmidt & Windley Sts, Tennant Creek PO Box 346 TENNANT CREEK NT 0861 Phone: (08) 8962 4302 Fax: (08) 8962 4420</p>	<p>CENTRAL AUSTRALIA Mwerre House 60 Hartley St, Alice Springs PO Box 721 ALICE SPRINGS NT 0871 Phone: (08) 8955 6122 Fax: (08) 8952 5927</p>	<p>KATHERINE WEST HEALTH BOARD Unit 10, Riverbank Office Village 38 First Street, Katherine PO Box 147 KATHERINE NT 0851 Phone: (08) 8971 9315 Fax: (08) 8972 1233</p>

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