

Arsenic Poisoning: A Growing health issue in Bangladesh

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Abstract

The arsenic poisoning of groundwater has been a concern but with increased exposure of the population to arsenic makes Bangladesh distinct from other nations. Lakhs of tubewells have been installed in the country to provide fresh, clean water to the people but the water has not been tested for contamination. This paper describes the health impacts due to arsenic contamination with reference to Bangladesh. If taken collectively, all the arsenic contaminated nations should get their water resources tested to prevent an alarming situation.

Keywords : Bengal, Organic, Contaminants, arsenic poisoning, Groundwater.

Introduction

Arsenic is a colorless metallic compound, with a chemical formulae and atomic number of As and 33 respectively. It does not smell and taste but soluble in water and being heavier it floats on it. Organic arsenic is Non toxic whereas inorganic arsenic is toxic. There has been various causes of Arsenic poisoning among the human beings but one of the prominent one is exposure at occupational sites and in industries. When a survey was conducted about the vulnerability of people, what was found is that most people whose diet is deficient in anti oxidants and vitamin B are at greater risk of the diseases caused by arsenic. Similarly an opposite relation was found between the acute exposure to arsenic and intake certain vitamins like vitamin A, C and E [1]

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Fig.1.1

Source: https://www.google.co.in/search?q=Arsenic+Exposure+images&source=lnms&tbn=isch&sa=X&ved=0ahUKEwiQ84yS7J7UAhXHvY8KHTzWAVcQ_AUICigB&biw=1366&bih=662#imgc=8LL9fRJlahxOpM

Health Concerns

Excess exposure to arsenic can cause Nausea, Pain in stomach, cramping of muscles, loss of hairs, diarrhea, vomiting (which many a times is bloody) and gastro intestinal symptoms. Patients suffering from arsenic poisoning also suffers from dehydration and distress. At chronic levels, arsenic poisoning can intervene in the process of glycolysis, may lead to coma followed by death. [2]

Some of the other symptoms can be heart related diseases, change in the color of the skin or pigment changes, burning sensation in eyes and Night Blindness, disabilities related to reading and learning other kinds of behavioral problems. Other impacts include effect on cardiovascular system which can further cause diseases like blackfoot and atherosclerosis.

Case Study of Bangladesh

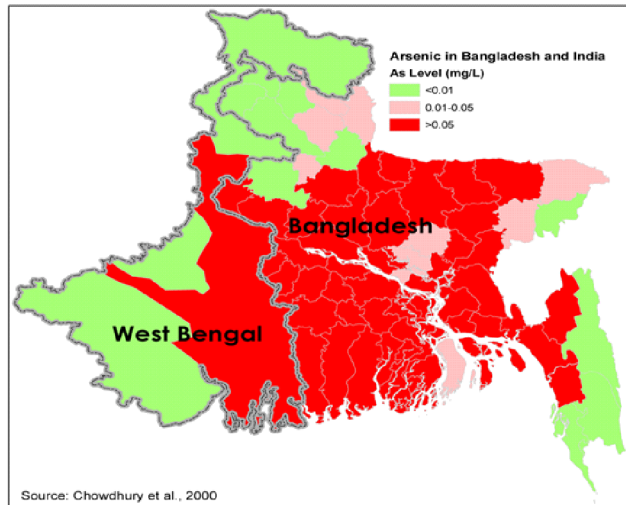


Fig. 1.2

Source:<http://images.rambler.ru/search?query=arsenic%20affected%20areas%20of%20bangladesh>

Bangladesh has been struggling with large percentage of its population suffering from arsenic poisoning. It has also been discovered that around 30 to 70 million people are at the risk of arsenic poisoning due to consumption of contaminated drinking water drawn from wells and tube wells. In the year 1984, the first skin lesion case was found at the school of medicine in Kolkata.

In the year 1994, a confirmation was given about the arsenic contamination groundwater was confirmed. In the analysis and testing done, the levels of arsenic found were more than 50ug/l which according to WHO standards should be 10ug/l.[3]

In Bangladesh, 770 million people, more the 50% of Bangladesh is exposed to acute levels of arsenic. Around 20% of the deaths are caused by arsenic as the major source of drinking water in Bangladesh is groundwater, found with high levels of arsenic.[3]

Skin Lesions Since the effects of arsenic appears over a long period of time, people have been found five year old skin lesions also.

Studies from other sources also reveal that children under fifteen years of age are also experiencing skin problems.

Skin Cancer A study carried out recently revealed that there is a direct relationship between the percentage of people suffering from skin cancer and concentration of arsenic in drinking water. It is estimated that around 70 million people of the nation are experiencing the impacts of arsenic contamination and two people in ten has a very high possibility of developing various kinds of cancer. An increased number of cancer cases are expected to come into light in the near future. Not only the cancer of skin but cancer of bladder, liver and lungs can also be a result of arsenic poisoning. Among children arsenic can interfere with the development of cognitive skills and neurological system leading to neurological disorders.[5]

The complete situation in Bangladesh indicates that people are at greater risk here as compared to other countries. In fact, people suffering from various diseases believe that it is a curse thereby giving rise to social stigmas.

Japan

In Tokyo, more than 10,000 children had suffered from arsenic in the year 1955 and majority of them has died after manifesting the symptoms like diarrhea, appetite loss, headache, dizziness, skin cancer etc.[4,]

The EPA (Environment Protection Agency) has established the levels of contaminant at 11 mcg/l in 2001 as compared to 6 mcg/l and made it enforceable since the year 2006.[5]

Ways to curb the problem

In order to manage the growing situation, awareness should be raised among people about the water resources, source of their contamination and population. More and more surveys on the health effects of the population must be carried out. Samples should be collected from the fields and sent for scientific testing in laboratories. Field kits can also be put into use as they can instantly reveal the level of arsenic present in the water and if found above permissible limits, an alternative water source could be found. Solution to the problem of demands intervention at the community level wherein people need to be convinced to change their drinking water habits.

Conclusion

The findings about the contamination of groundwater resource with arsenic in different countries of the world including India, china,USA proves this fact that it is a global situation. On the basis of their individual findings, the respective countries must get their groundwater resources tested . The situation in Bangladesh indicates that the problem needs a rapid action but to effectively fight this menace , the already existing organizations and systems in place must become active and respond immediately. Since the factors of arsenic contamination does not need any second confirmation, therefore all the affected nations must put joint efforts along with International organizations like UNICEF and WHO and come up with long term plans.

References:

1. http://users.physics.harvard.edu/~wilson/arsenic/arsenic_project_health_effects.html
2. <http://www.mnn.com/health/fitness-well-being/stories/5-facts-about-arsenics-effects-on-the-human-body> •
3. <http://www.greenfacts.org>
4. UNICEF. *Arsenic Mitigation in Bangladesh*. 2008 available at <http://www.unicef.org/bangladesh/Arsenic.pdf>
5. Argos M, Kalra T, Rathouz PJ, Chen Y, Pierce B, Parvez F, et al. *Arsenic exposure from drinking water, and all-cause and chronic-disease mortalities in Bangladesh (HEALS): a prospective cohort study*. *Lancet* 2010.]
6. Ahmad, S.A. et. al., “Arsenic Contamination in Ground Water and Arsenicosis in Bangladesh”, *International Journal of Environmental Health Research*, Vol. 7, pp.271-276, 1997.
6. Biswas, B.K. et.al. “Detailed Study Report of Samta, One of the Arsenic
7. Talukder, S.A., Chatterjee, A., Zheng, J., Kosmus, W., “Studies of Drinking Water Quality and Arsenic Calamity in Groundwater of Bangladesh”, *Proceedings of the International Conference on Arsenic Pollution of*

Groundwater in Bangladesh: Causes, Effects and Remedies, Dhaka, Bangladesh, February 1998.

8. *Oman Med J*. 2011 May; 26(3): 207.

