Volume 2, Issue 6 June 2016 ISSN NO: 2454 - 7514

North Asian International Research Journal Consortium

North Asian International Research Journal

Of

Science, Engineering and Information Technology

IRJIF IMPACT FACTOR: 3.01

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ISSN NO: 2454 -7514

North Asian International Research Journal of Science, Engineering & Information Technology is a research journal, published monthly in English, Hindi. All research papers submitted to the journal will be double-blind peer reviewed referred by members of the editorial board. Readers will include investigator in Universities, Research Institutes Government and Industry with research interest in the general subjects

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DETECTION OF CHROMIUM IN URINE SAMPLE AMOUNG THE POPULATION OF UNNAO DISTRICT OF UTTAR PRADESH.

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ABSTRACT :

Chromium is a mineral our bodies use in small amounts for normal body functions, such as digesting food. Human body needs very little chromium and most people get it enough in their regular diet. Chromium occurs naturally by the burning of oil and coal, petroleum from ferro cromate refractory material, pigment oxidents, catalyst, chromium steel, and fertilizers.

Unnao is the one of major industrial towns adjacent to Kanpur having most of cotton, leather, pharmaceutical, steel and other industries. Unnao industrial area is situated near Kanpur in northern side of Ganga River having more than 50 industrial units mainly tannery, catering the need of nation. The effluents discharged by the industries, after passing through a common effluent treatment plant having approx 70% treating capacity, is finally discharged in the Ganga River. The quality of ground water in the industrial areas is under constant threat of contamination directly or indirectly. Remarkable high concentration of chromium in some parts of ground water of Unnao and Kanpur districts is a common feature in the region.

Keywords: ***Chromium Urine Sample, UNNAO, Uttar Pradesh.***

INTRODUCTION:

Chromium is the seventh most abundant element on earth. Chromium occurs in several oxidation states in the environment ranging from Cr2+ to Cr6+. The most commonly occurring forms of Cr are trivalent Cr3+ and hexavalent Cr6+, with both states being toxic to animals, humans and plants. Kanpur, India, stands as a prime

example of how tannery chemicals and wastewater can negatively affect health and ecosystems. In 2013, the city became the largest exporter of leather. About 80% of the wastewater is untreated and dumped straight into Kanpur's main water source, the River Ganges. Farmland is swamped with blue-tinted water, poisoned with chromium III, lead, and arsenic. Decades of contamination in the air, water, and soil have caused a variety of diseases in the people who live in the area. Health problems include asthma, eyesight problems, and skin discoloration. A wide range of industrial and agriculture practices increase the toxic level in environment causing concern about the pollution caused by chromium. Pollution of the environment by chromium particularly hexavalent chromium has been the greatest concern in recent years.

The presence of excess of chromium beyond the permissible limit is destructive to plants since it severely affects the biological factors of the plant and enters the food chain on consumption of these plants material. Chromium enters in human body by the consumption of polluted water & vegetables. Cr shows many harmful effects. It has been monitored that peoples who lived near tannery industries in Kanpur have a higher level of Chomium in biological fluids.

EXPERIMENTAL:

Urinary excretion of Chromium is a useful monitor of exposure through water. In this study 20 urine samples were collected from male & females of different age group & send them to IITR Lucknow for instrumental examination shown in table 1.

Urine was collected directly into plastic bottles an aliquot of urine varying from 18-22 gm was diluted to approximately 100 gm preserved with a final Nitric Acid content of approximately 5% (v/v) & stored in plastic bottles. All samples were tested in Atomic Absorption Spectrometer (Zee Nit, Analytic Jena on Graphite mode).

Table 1: Samples of the Urinary excretion Chromium level of different persons

S No	Name	Chromium (ug/L)
1	Pratap kumar	4.43
2	Jai shree	12.10
3	Ram chandra	17.75
4	Ram swaroop	4.06
5	Lilawati	1.80
6	Siya	1.01
7	Bauvan	BDL
8	Ram shree	6.75
9	Gobilal	BDL
10	Rambharose	BDL
11	Sunil	2.37
12	Puttilal	5.87
13	Durgesh	4.38
14	Binda lal	BDL
15	Aashu	13.56
16	Ram shewak	BDL
17	Nankau	15.54
18	Khushbu	BDL
19	Shikha	13.57
20	Suraj	11.66

* BDL= Below Detection Limit

RESULT AND DISCUSSION:

- Detection limit of instrument is 0.44 ug/l.
- In few samples the Chromium level is BDL.
- Many samples shows a high percentage of Cr in urine (=17.75)
- Results shows many persons of the Area are affected by the excess of Cr and its enters in their body by water or food.
- High level of Cr in body is very harmful & cause many serious problems like
  Renal failure, Glaucoma, Diabetes etc

EFFECT ON BODY:

Our body use Cr in a small amount. it is a essential mineral for our body in small. Chromium helps to move blood sugar (glucose) from the bloodstream into the cells to be used as energy and to turn fats, carbohydrates, and proteins into energy. Chromium may help some people with type 2 diabetes. It may help them control their blood sugar and may play a role in the management of type 2 diabetes. Chromium supplements are promoted as being helpful in building muscle and burning fat and in helping the body use carbohydrates. But high amount of Cr may affect the eyes. There is a link between low chromium levels and increased risk of glaucoma. Chromium slows the loss of calcium, so it may help prevent bone loss in women during menopause. Taking excessive chromium supplements can lead to stomach problems and low blood sugar (hypoglycemia). Too much chromium from supplements can also damage the liver, kidneys, and nerves, and it may cause irregular heart rhythm.

CONCLUSION:

Chromium is not solely responsible for these diseases. Methyl isothiazolinone, which is used for microbiological protection (fungal or bacterial growth), causes problems with the eyes and skin. Anthracene, which is used as a leather tanning agent, can cause problems in the kidneys and liver and is also considered a carcinogen. Formaldehyde and arsenic, which are used for leather finishing, cause health problems in the eyes, lungs, liver, kidneys, skin, and lymphatic system and are also considered carcinogens. The waste from leather tanneries is detrimental to the environment and the people who live in it. The use of old technologies plays a large factor in how hazardous wastewater results in contaminating the environment. This is especially prominent in small and medium-sized tanneries in developing countries. However, with updated infrastructures and the implementation of wastewater treatment systems, leather tanneries can become more environmentally friendly.

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