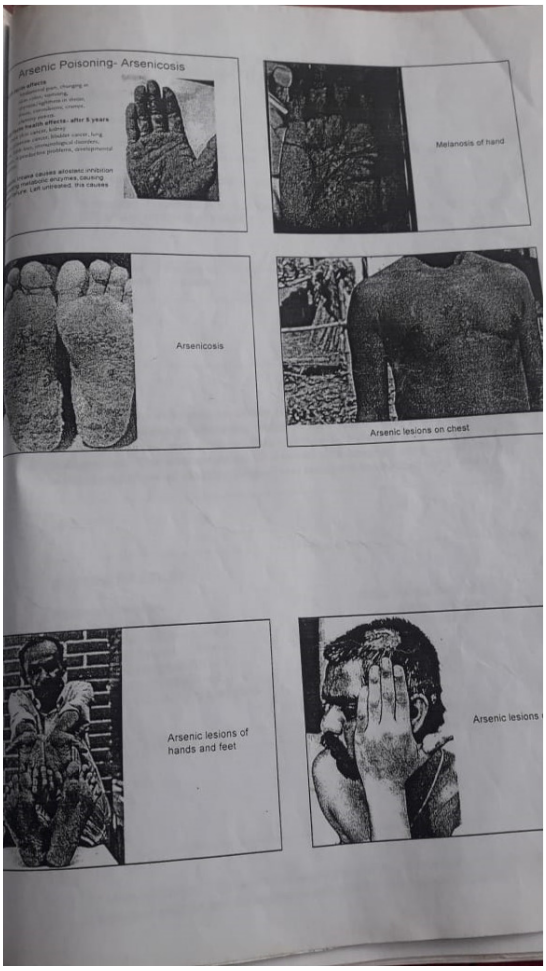
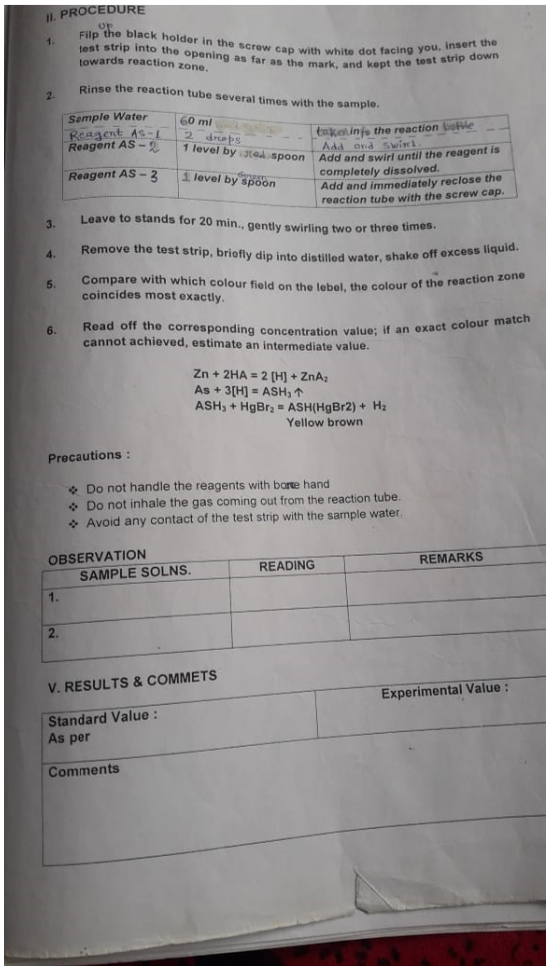
Detection of Arsenic in Water
Prabhas Biswas/JCGP





II. PROCEDURE

1. Filp the black holder in the screw cap with white dot facing you, insert the test strip into the opening as far as the mark, and kept the test strip down towards reaction zone.
2. Rinse the reaction tube several times with the sample.

Sample Water	60 ml	
Reagent AS – 1	2 drops	Add and Swirl
Reagent AS – 2	1 level by std. spoon	Add and swirl until the reagent is completely dissolved.
Reagent AS – 3	1 level by spoon	Add and immediately reclose the reaction tube with the screw cap.

3. Leave to stands for 20 min., gently swirling two or three times.
4. Remove the test strip, briefly dip into distilled water, shake off excess liquid.
5. Compare with which colour field on the lebel, the colour of the reaction zone coincides most exactly.
6. Read off the corresponding concentration value; if an exact colour match cannot achieved, estimate an intermediate value.

$$Zn + 2HA = 2[H] + ZnA_2$$
$$As + 3[H] = ASH_3 \uparrow$$
$$ASH_3 + HgBr_2 = ASH(HgBr2) + H_2$$
Yellow brown

Precautions :

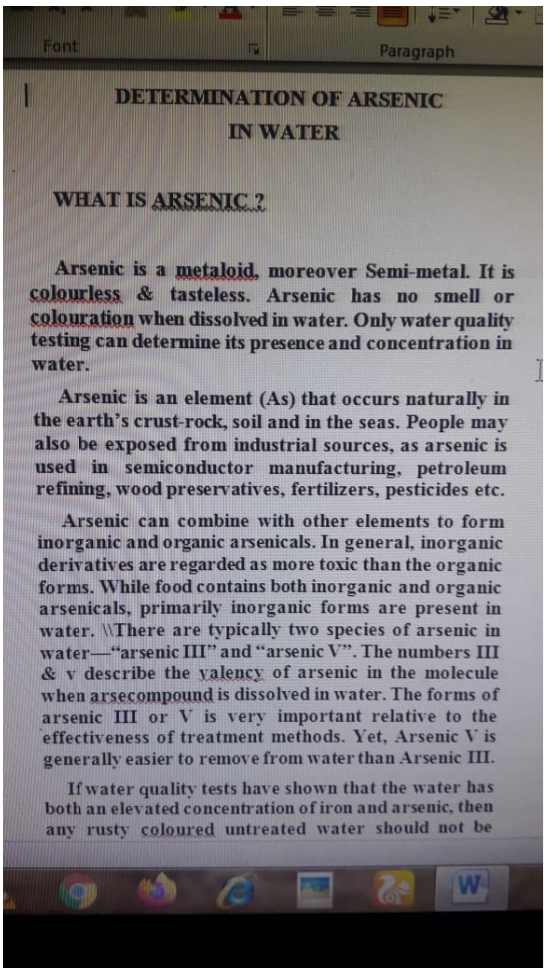
- Do not handle the reagents with bare hand
- Do not inhale the gas coming out from the reaction tube.
- Avoid any contact of the test strip with the sample water.

OBSERVATION

SAMPLE SOLNS.	READING	REMARKS
1.		
2.		

V. RESULTS & COMMETS

Standard Value : As per	Experimental Value :
Comments	



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DETERMINATION OF ARSENIC IN WATER

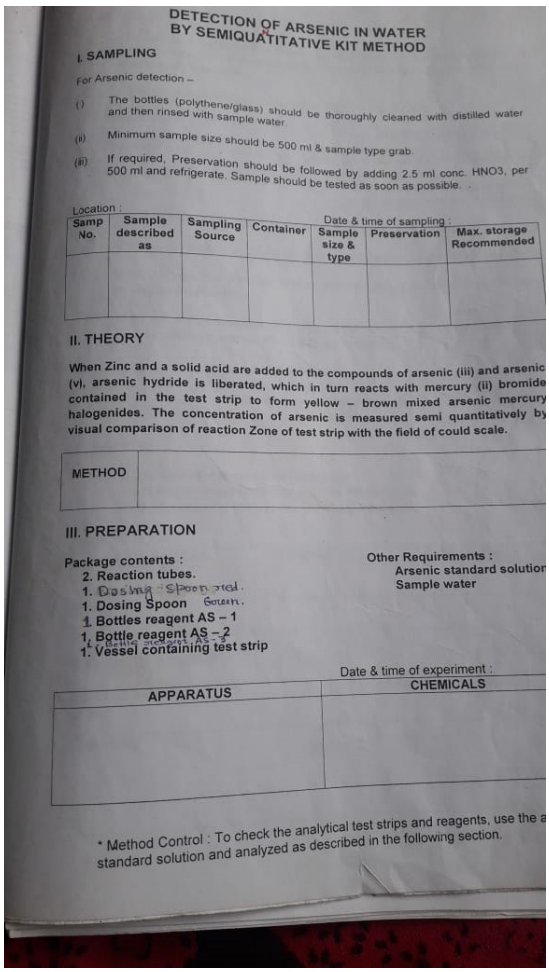
WHAT IS ARSENIC ?

Arsenic is a metaloid, moreover Semi-metal. It is colourless & tasteless. Arsenic has no smell or colouration when dissolved in water. Only water quality testing can determine its presence and concentration in water.

Arsenic is an element (As) that occurs naturally in the earth's crust-rock, soil and in the seas. People may also be exposed from industrial sources, as arsenic is used in semiconductor manufacturing, petroleum refining, wood preservatives, fertilizers, pesticides etc.

Arsenic can combine with other elements to form inorganic and organic arsenicals. In general, inorganic derivatives are regarded as more toxic than the organic forms. While food contains both inorganic and organic arsenicals, primarily inorganic forms are present in water. \\There are typically two species of arsenic in water—"arsenic III" and "arsenic V". The numbers III & v describe the valency of arsenic in the molecule when arsecompound is dissolved in water. The forms of arsenic III or V is very important relative to the effectiveness of treatment methods. Yet, Arsenic V is generally easier to remove from water than Arsenic III.

If water quality tests have shown that the water has both an elevated concentration of iron and arsenic, then any rusty coloured untreated water should not be



DETECTION OF ARSENIC IN WATER BY SEMIQUATITATIVE KIT METHOD

I. SAMPLING

For Arsenic detection –

(i) The bottles (polythene/glass) should be thoroughly cleaned with distilled water and then rinsed with sample water.

(ii) Minimum sample size should be 500 ml & sample type grab.

(iii) If required, Preservation should be followed by adding 2.5 ml conc. HNO3, per 500 ml and refrigerate. Sample should be tested as soon as possible.

Location : Date & time of sampling :

Samp No.	Sample described as	Sampling Source	Container	Sample size & type	Preservation	Max. storage Recommended

II. THEORY

When Zinc and a solid acid are added to the compounds of arsenic (iii) and arsenic (v), arsenic hydride is liberated, which in turn reacts with mercury (ii) bromide contained in the test strip to form yellow – brown mixed arsenic mercury halogenides. The concentration of arsenic is measured semi quantitatively by visual comparison of reaction Zone of test strip with the field of could scale.

METHOD	

III. PREPARATION

Package contents :
2. Reaction tubes.
1. Dosing Spoon std.
1. Dosing Spoon Green.
1. Bottles reagent AS – 1
1. Bottle reagent AS – 2
1. Vessel containing test strip

Other Requirements :
Arsenic standard solution
Sample water

Date & time of experiment :

APPARATUS	CHEMICALS

* Method Control : To check the analytical test strips and reagents, use the a standard solution and analyzed as described in the following section.