

MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT AND GANGA REJUVENATION

OCCURRENCE OF HIGH ARSENIC CONTENT IN GROUNDWATER

[Action taken by Government on the recommendations contained in the First Report (Sixteenth Lok Sabha) of the Committee on Estimates]

COMMITTEE ON ESTIMATES (2016-17)

NINETEENTH REPORT

(SIXTEENTH LOK SABHA)



LOK SABHA SECRETARIAT
NEW DELHI

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(Presented to Lok Sabha on 11.08.2016)



**LOK SABHA SECRETARIAT
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COMPOSITION OF THE COMMITTEE ON ESTIMATES
(2016-17)

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* Elected Vide Lok Sabha Bulletin Part-II No. 3908 dated 28.07.2016 vice Shri Arjun Ram Meghwal appointed as Minister.

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CHAPTER I

REPORT

This Report of the Committee deals with the action taken by the Government on the recommendations contained in the First Report (Sixteenth Lok Sabha) on the subject 'Occurrence of High Arsenic Content in Ground Water' pertaining to the Ministry of Water Resources, River Development and Ganga Rejuvenation.

1.2 The First Report (Sixteenth Lok Sabha) was presented to Lok Sabha on 11.12.2014. It contained 28 observations/recommendations. Action Taken Notes on all these observations/recommendations were received from the Ministry of Water Resources, River Development and Ganga Rejuvenation on 10.08.2015. However, on scrutiny, some of the replies were found to be generic or perfunctory in nature. In respect of some there were no specific replies. Accordingly, the Ministry of Water Resources, River Development and Ganga Rejuvenation were requested to furnish specific and relevant replies to the Committee.

1.3 The updated ATR to the recommendations on which the Ministry did not furnish specific replies were received on 25.04.2016. Replies to the observations and recommendations contained in the Report have broadly been categorized as under:-

(i) Recommendations/Observations which have been accepted by the Government:

Sl. Nos. 1,3, 4, 5, 7, 9, 10,11, 12, 16, 17,18, 19, 20, 21, 24, 25, 26, 27, 28 (Total 20)

(Chapter-II)

(ii) Recommendations/Observations which the Committee do not desire to pursue in view of Government's reply:

Nil

(Total -Nil)

(Chapter-III)

(iii) Recommendations/Observations in respect of which Government's replies have not been accepted by the Committee:

Sl. Nos. 6,8,13,14,23

(Total 05)

(Chapter IV)

(iv) Recommendations/Observations in respect of which final reply of Government is still awaited:

Sl. Nos. 2,15,&22

(Total 03)

(Chapter V)

1.4 The Committee desire that response to the comments contained in Chapter I of this Report should be furnished to them expeditiously.

1.5 The Committee will now deal with the action taken by the Government on some of their recommendations.

A. Need for Comprehensive and Reliable Data

(Observations/Recommendation Serial No. 2)

1.6 Referring to not only the absence of comprehensive, reliable, centralized data but also the varying nature of the data on the number of districts / states affected by arsenic contamination submitted by different ministries - Ministry of Water Resources, River Development and Ganga Rejuvenation (M/o WR, RD & GR) showed that 86 Districts in 10 States have Arsenic contamination exceeding the permissible limit, the Department of Agricultural Research and Education (DARE) had, listed out only 71 Districts in 09 States having Ground Water Arsenic contamination and the Department of Science and Technology (DST) came out with yet another list of affected districts and

States due to arsenic contamination of ground water and the magnitude of population exposed to arsenic contamination at 70.4 million spread across 35 districts in six states, the Committee deplored such casual attitude and emphasized that dependable, accurate and regular update of data were essential for providing perspectives with regard to public health, agriculture and other purposes. They accordingly desired that immediate steps should be taken to draw up a central data base about Arsenic affected districts/States not only for drinking water segment but also for irrigation and the data of human population, animals and crops exposed to Arsenic.

1.7 The Ministry, in their Action Taken Reply (ATR) stated that

- (i) M/o Consumer Affairs have informed that amendment to IS 10500:2012 has been finalized and Extra-Ordinary Gazette Notification has been sent for issuance. Thus, the process of revision of limit of Arsenic from 0.05 mg/l to 0.01 mg/l has been completed. With this modification, the existing data will undergo a major change and may include more States/ Districts/ Population affected by Arsenic.
- (ii) Task Force constituted by M/o Health & Family Welfare will work out modalities of doing a robust mapping of areas affected by high Arsenic content in ground water.
- (iii) Inter Ministerial group (IMG) has asked Central Ground Water Board (CGWB) to compile data on habitations affected by Arsenic contamination of ground water for (a) 0.01 to 0.05 ppm and (b) more than 0.05 ppm. Chairman, IMG advised that all the State Governments may provide data to CGWB at the earliest
- (iv) The 'Inter-Ministerial Group' on 'Arsenic Mitigation' constituted vide Order dated 22nd December, 2014 has been made a Standing Group, which will (a) over-see the implementation of Action Plan of the various Ministries/Departments; (b) reconcile data; (c) guide the entire program and; (d) coordinate the efforts of all Stakeholders.

1.8 The Committee are pleased to note that pursuant to their recommendation, the process of limit of arsenic contamination from 0.05 mg/l to 0.01 mg/l has been completed and notification has been issued. However, with this modification, the existing data will undergo major change. Further, the Committee hope that the Task

Force under Ministry of Health and Family Welfare would work out the modalities for meticulous mapping of arsenic affected areas so that the revised and reliable data becomes available at the earliest and the Committee apprised.

B. Minimizing Use of Arsenic Rich Ground Water for Irrigation
(Observations/Recommendations Serial No. 3)

1.9 The Committee in the original report, referring to the vision document of National Institute of Hydrology (NIH) and Central Ground Water Board (CGWB) , noted that investigators consider water-soil-crop-food transfer, cooking water and direct ingestion of Arsenic contaminated water as the major exposure pathways of Arsenic. As the people take contaminated water along with contaminated food, the chances of damage become greater. The domestic animals in Arsenic affected areas regularly consume Arsenic laden drinking water, fish and food. Consumption of meat from such infected animals, causes Arsenic intake. All these show the great danger of Arsenic spread and call for urgent steps to ensure proper Ground Water management to minimize use of Arsenic rich ground water for irrigation purposes. The Committee, therefore, stressed that remedial measures should be taken in this regard without loss of time.

1.10 The Ministry, in their Action Taken Reply (ATR) stated that Indian Council of Agricultural Research (ICAR) had stated that under All India Coordinated Research Project (AICRP), on Irrigation Water Management, a project viz. "Studies of Arsenic contamination and management in soil-plant-water in shallow tube well irrigated farming areas of Nadia district (West Bengal)" has been initiated at Gyeshpur centre, West Bengal. The project will study reduction of Arsenic accumulation in plants, humans and animals including cattle.

1.11 The Committee while appreciating the action initiated by ICAR desire that the project study of arsenic contamination in Nadia district of West Bengal be completed expeditiously and shared with the Departments / Ministries concerned to enable them

to initiate appropriate action to address the arsenic contamination in food and animal products.

C. Sources of Arsenic Contamination

(Observations/Recommendations Serial No. 4)

1.12 As the source of arsenic in ground water through natural processes in Ganga Brahmaputra plain has not been fully established during the last four decades, the Committee recommended that a time bound programme be implemented for identifying sources to conclusively establish the mobilization process which helps in Arsenic release from minerals to ground water.

1.13 The Ministry of Water Resources , River Development and Ganga Rejuvenation in their Action Taken Reply stated that Inter ministerial group (IMG) has directed that National Institute of Hydrology (NIH), Roorkee to take up a study on genesis of Arsenic occurrence in Ganga Brahmaputra basin.

1.14 The Committee note with some satisfaction that pursuant to their recommendation, the Inter Ministerial Group (IMG) has directed the National Institute of Hydrology (NIH), Roorkee, to take up a study on genesis of Arsenic occurrence in the Ganga Brahmaputra basin. The Committee, however, urge the Ministry to ensure that the study is completed within a stipulated time frame by taking up the matter with the NIH at regular intervals and keep the Committee informed of the progress made in this regard.

D. Collection of Relevant Data and National Programme on Arsenic Mitigation and water quality related Health problems

1.15. Expressing serious concern at the lack of centralized data on the adverse impact of arsenic intake on the health of the people despite experts' informing the Committee of large number of confirmed cases of serious ailments like hyper pigmentation, keratosis, anaemia, swelling of legs, liver fibrosis, chronic lung diseases, gangrene, neuropathy, cancer, etc. and also deaths due to arsenic poisoning, the Committee pointed (recommendation no. 6) also at the failure of the Ministry to launch national programme on Arsenic Mitigation and treatment as recommended by the Working Group of NITI Aayog (erstwhile Planning Commission). The Committee recommended that at least now, a national programme be launched by M/o Health and Family Welfare and by Departments of Animal Husbandry, Dairying and Fisheries respectively.

1.16 (i) The M/o WR, RD & GR, in the ATR stated inter- alia that :

“(i) The Task Force constituted by M/o Health & Family Welfare will work out modalities of doing a robust mapping of areas affected by high Arsenic content in ground water.

(ii) In the first meeting of IMG, Central Ground Water Board (CGWB) has been asked to compile data on habitations affected by Arsenic contamination of ground water for (a) 0.01 to 0.05 ppm and (b) more than 0.05 ppm.

Chairman, IMG advised that all the State Governments may provide data to CGWB at the earliest. Arsenic concentration data should also contain the latitude and longitude details of the wells from where samples were collected so that GIS based maps can be prepared. This will now be coordinated by IMG which has been made into standing group.

(iii) The 'Inter-Ministerial Group' on 'Arsenic Mitigation' constituted vide Order dated 22nd December, 2014 has been made into Standing Group, which will (a) over-see the implementation of Action Plan of the various Ministries/Departments; (b) reconcile data; (c) guide the entire program and ; (d) coordinate the efforts of all Stakeholders.”

1.17 As the Action Taken report furnished by the M/o WR, RD & GR had not given any specific response to the Committee's recommendation for formulation of National Plan for tackling Arsenic contamination, the Ministry were requested to furnish the specific reply. The M/o WR, RD & GR, furnished the following replies from the Ministries concerned:

“Ministry of Health and Family Welfare have constituted a Task Force for countering ill effects of Arsenic in Ground Water and a Committee/Expert Group to review the currently-available treatments for Arsenic related diseases and to suggest areas for future focused research. The reports are awaited.

Similarly, ICAR has initiated a project to reduce Arsenic accumulation in plant-human-animal including cattle, the results of which are awaited. Ministry of Drinking Water & Sanitation have also shared their plans for long term and short term solutions for Arsenic mitigation. The consolidation of all these efforts would lead to formulation of a National Plan on Arsenic mitigation.

Further, as informed by D/o Animal Husbandry, Dairying and Fisheries, the department is implementing a Centrally Sponsored Scheme namely “Assistance to States for Control of Animal Diseases (ASCAD), under which the funds are provided for Information, Education & Communication (IEC) campaign including training of veterinarians and para-veterinarians.

The Department vide their letter dated 31st July, 2015 had already issued the advisories to the States requesting them to give wider publicity to the matter of Arsenic Contents in water through IEC campaigns, trainings, seminars conducted under ASCAD.”

1.18. In the updated ATRs, the Ministry of Drinking Water and Sanitation, furnishing the data on the arsenic affected rural habitations and the number of people, submitted that:

“there are 1490 Arsenic affected rural habitations where 23.98 lakh people are at risk. IMIS 2015 data indicates that there are only 6 Arsenic affected States – West Bengal, Assam, Bihar, UP, Karnataka and Punjab.

In the first alternative, when the maximum permissible limit of Arsenic is maintained at 0.05mg/l, an outlay of Rs. 268 Crore for short term solution (by providing community water purification plant including seven years O&M) and Rs. 1262.69 crores for long term & sustainable solution (taking up water supply projects) i.e. nearly Rs. 1530 Crores is required.

Total Cost : Rs.. 1530 Crores (Arsenic limit at 0.05mg/l)

The no. of Arsenic affected habitations is 10028 if maximum permissible limit of Arsenic is considered at 0.01mg/l. An amount of Rs. 1805.04 Crores for short term (by providing community water purification plant including seven years O&M) and Rs. 6319.56 Crores for long term solution (taking up water supply projects) i.e., nearly Rs. 8124 Crores is required.

Total Cost : Rs. 8124 Crores (Arsenic limit at 0.01mg/l)”

1.19 The Ministry in their updated ATR submitted further as follows:

“It has been stated that Ministry of Drinking Water and Sanitation have informed that there are 1490 arsenic affected rural habitations where 23.98 lakh people are at risk.

The updated reply indicates that the number of arsenic affected habitations is 100028 if maximum permissible limit of arsenic is considered at 0.01 mg/l.

On initiating appropriate diagnostic and curative measures, the Ministry informed that Ministry of Health and Family Welfare have constituted a Task Force for countering ill effects of arsenic in ground water and a Committee/Expert Group to review the currently-available treatments for arsenic related diseases as also to suggest areas for future focused research. The reports are awaited.

Similarly, ICAR has initiated a project to reduce arsenic accumulation in plant-human-animal including cattle, the results of which are awaited.

Ministry of Drinking Water and Sanitation have also shared their plans for long term and short term solutions for arsenic mitigation.

The Ministry has stated that the consolidation of all these efforts would lead to formulation of a National Plan on arsenic mitigation”

1.20 The Committee in the original report (Recommendation no. 14) had expressed displeasure at the fact that no national health programme has so far been formulated for ground water quality related health problems as suggested by the working group of Planning Commission in the year 2011. Depositing before the Committee, a representative of the M/o Health & Family Welfare emphasized the need to formulate a national programme in this regard and assured that a task force would be constituted to look into Arsenic issues and would be asked to submit its report by February, 2015. The Committee expected that action is taken in this regard promptly as promised, with sufficient budgetary provision. The Committee also desired that a detailed report should be made to Parliament regularly every six months (say April and November) bringing out the efforts made and progress achieved state-wise in treatment of Arsenic affected people under the proposed National Health Programme.

1.21 The M/o WR,RD &GR in their action taken reply stated as follows:

“The symptoms of diseases which may be caused due to Arsenic contamination of drinking water usually manifest after consumption of contaminated water over

a prolonged period of time. The impact of Arsenic contamination will consequently not be visible immediately upon drinking of Arsenic contaminated water. The relevant diseases, moreover, may also be caused by factors other than Arsenic contamination. It is not easy to segregate cases of the said diseases where cause and effect is specifically linked. Separate diagnostic tests to confirm that disease is caused due to drinking of Arsenic contaminated water may not be easily available.

A National Programme for a particular disease should normally meet the requirement of all patients suffering from the said disease. For example, a patient suffering from cancer or liver disease will need to be treated irrespective of whether the cause of the said disease was due to drinking Arsenic contaminated water over a prolonged period of time or due to some other reasons. A National Programme, therefore, should focus on providing clean drinking water to prevent Arsenic contamination related diseases. Simultaneously, the health systems need to be strengthened to meet the healthcare requirements of all persons and to get correct diagnosis and treatment for all diseases, including Arsenic related diseases.

Consequently, for the cohort of persons who have been drinking Arsenic contaminated water and for whom diseases or symptoms may be already visible or emerge in the coming years, practical approach would be to strengthen the health infrastructure in the relevant districts for which suitable funding can be envisaged under National Health Mission (NHM). The affected States would need to assess their requirements and reflect the same in the Project Implementation Plans (PIPs). Based on the above, Ministry of Health & Family Welfare will be in a position to project the incremental fund requirement under NHM.

However, an Expert Group under the Director General of Health Services has been constituted to prepare guidelines for detection and management of Arsenicosis in India. The Expert Group has formulated draft guidelines, which upon finalization will be shared with the State Governments and other stakeholders for necessary action.

It has been decided by the Group of Officers in a meeting held on 13.07.2015 that M/o Health and Family Welfare will issue an advisory to the Arsenic affected States through NHM on the health aspects of Arsenic.

Agree to comply with the suggestion of furnishing a detailed report to the parliament every six months or as decided by the Committee of secretaries”

1.22. In written reply to a query as to why the option of frequency of laying the reports bringing out the efforts made and the progress achieved state wise in treatment of arsenic affected people under the proposed National Health Programme, before the Parliament be given when the Committee had specifically recommended that the reports should be laid before Parliament every six months (say April and November) regularly, the M/o WR,RD &GR submitted as under-

“Ministry of Health & Family Welfare has informed that the Guidelines “Detection, Prevention and Management of Arsenicosis in India – A Field Guide” have been finalized by the expert Committee and sent to the Arsenic affected States. Concerned State Governments were advised to strengthen District/Community/Health Center infrastructure for early diagnosis, management and treatment of Arsenic affected cases and for this purpose seek necessary support in the State Programme Implementation Programmes submitted under NHM.”

1.23 The Committee are pleased to note that pursuant to their recommendations, the concerned Ministries have initiated a variety of steps to address and mitigate arsenic related problems. Notably, the Ministry of Health and Family Welfare have constituted a task force for countering ill effects of arsenic in ground water and set up a committee /Expert Group to review the currently-available treatments for Arsenic related diseases and to suggest areas for future focused research. The ICAR has initiated a project to reduce Arsenic accumulation in plant-human-animal including cattle. The plans formulated by M/o Drinking water and sanitation also envisage to mitigate arsenic impact. Likewise, steps have been taken by D/o Animal Husbandry, Dairying and Fisheries, etc., to give wide publicity to the hazards of Arsenic. All these efforts, the Committee have been assured, would lead to formulation of a consolidated national plan on Arsenic Mitigation. The M/o H&FW have submitted, inter- alia, that a National Programme for a particular disease should normally meet the requirement of all patients suffering from the said disease. For example, a patient suffering from cancer or liver disease will need to be treated

irrespective of whether the cause of the said disease was due to drinking Arsenic contaminated water over a prolonged period of time or due to some other reasons. Considering the severely debilitating effect of arsenic on human beings and animals covering 12 States and 96 districts impacting over 70 million people , the Committee reiterate that the concerned Ministries must coordinate their efforts and formulate a consolidated National Programme to combat and overcome the wide spread human sufferings caused by arsenic.

1.24. The Committee had recommended in their original report that a detailed report should be presented to Parliament regularly every six months (say April and November) bringing out the efforts made and the progress achieved, state wise, in treatment of arsenic affected people under the proposed National Health Programme. However, the M/o Health and family Welfare agreed to comply with the suggestion of furnishing a detailed report to the Parliament every six months or as decided by the Committee of Secretaries. In written reply to a query as to why the option of frequency of laying the reports before the Parliament under the proposed National Health Programme be given to Committee of Secretaries, when the Committee had specifically recommended that the reports should be laid before Parliament every six months (say April and November) regularly, the Ministry could not provide any specific reply. The Committee find little justification to refer the matter to the Committee of secretaries and therefore reiterate their earlier recommendation in this behalf.

1.25 The M/o H&FW in their action taken replies have submitted that an Expert Group under the Director General of Health Services has been constituted to prepare guidelines for detection and management of Arsenicosis in India and the Group has formulated draft guidelines, which upon finalization will be shared with the State Governments and other stakeholders for necessary action. The Committee would like

to be apprised within three months of the presentation of this report about the finalisation or otherwise of the guidelines and sharing of the same with the State Governments.

1.26 The Committee also would like to be informed of the advisories, if any, issued to the Arsenic affected States through National Health Mission (NHM) on the health aspects of Arsenic, as decided by M/o H&FW in a meeting held on 13 July, 2015.

E. NABL Accreditation

(Observations/Recommendations Serial No. 8)

1.27 The Committee, in the original Report had observed that the process of accreditation of CGWB laboratories by National Accreditation Board for Testing and Calibration Laboratories (NABL) was initiated in April 2011 and only 03 out of 16 chemical laboratories of CGWB (Lucknow, Chandigarh & Hyderabad) have been accredited so far. Further, there was proposal to target five more labs for NABL accreditation during the 12th Plan. The Committee urged that serious efforts should be made to get NABL accreditation for all the remaining 13 labs of CGWB before the end of 12th Plan.

1.28 The M/o WR, RD&GR in their action taken reply stated as follows:

“The labs of CGWB at Southern region , Hyderabad; Northern region , Lucknow & North Western region , Chandigarh have been accredited by NABL. The remaining labs at Western Region, Jaipur; South Eastern Region, Bhubaneswar; Central region , Nagpur; West Central Region, Ahmedabad ; & North Eastern Region ,Guwahati, are in the process of getting NABL accreditation during XII Plan. The remaining regions have also been advised to obtain NABL accreditation in a time bound manner.”

1.29 As no time limit has been set for the remaining labs for getting NABL accreditation, despite the Committee's recommendation to obtain NABL accreditation for all the remaining 13 labs of CGWB before the end of 12th Plan, the Ministry were requested to furnish a clarification in this regard . the Ministry accordingly, submitted that –

“the lab requires minimum 4 chemists for getting the NABL Accreditation. Since adequate number of chemists is not available in CGWB as of now the timeline has not been indicated. A Committee has been constituted to study the working of the chemical laboratories in CGWB; to identify gaps and suggest corrective measures which will help in seeking NABL accreditation”

1.30 The Committee, in the original Report had urged the Ministry to make serious efforts for obtaining accreditation for all the remaining 13 labs of CGWB before the end of 12th Plan. The M/o Water Resources, River Development & Ganga Rejuvenation (M/o WR,RD &GR) in their initial action taken reply submitted that the remaining labs have also been advised to obtain NABL accreditation in a time bound manner. However, in the updated replies, the Ministry submitted that each lab requires minimum 4 chemists for getting the NABL Accreditation and since adequate number of chemists are not available in CGWB as of now, the timeline has not been indicated. Taking a serious note of the delay in providing 52 posts of chemists, the Committee wonder how these labs would get accreditation from NABL by the end of the 12th Five Year Plan. The Committee therefore, reiterate that suitable action must be initiated by the CGWB to ensure that the remaining regions get NABL accreditation by the end of 12th Plan. Further, the Committee have been apprised that a Committee has been constituted to study the working of the chemical laboratories in CGWB, to identify gaps and suggest corrective measures which will help in seeking NABL accreditation. The details regarding the Committee constituted to study the working of chemical labs in CGWB, the time frame for submitting the report and the finding, if any, the effort made to fill the sanctioned vacancies and to make the posts attractive enough must be shared with the Committee in the action taken statement. The Committee hope all these measures would be completed and vacancies filled within a year of presentation of this report.

F. Monitoring Arsenic build up in Soils, Crops and Vegetables

(Observation /Recommendation Serial No. 12)

1.31 (i) In view of the lack of clarity on the issue of whose responsibility is it to monitor arsenic build up in soils crops and vegetables, the Committee recommended that Cabinet Secretary should sort out the issue. The Committee also recommended that National Sample Survey should be conducted to ascertain all water quality problems and an appropriate remedial plan devised. The Committee further recommended that there should be a mechanism for constant monitoring of contamination levels in water and soil throughout the country for taking timely corrective measures

1.32 The Ministry in their initial ATR had simply stated that the matter is under consideration of Ministry of Agriculture.

1.33 In the updated action taken replies, however, the Ministry of WR, RD & GR submitted as under:

“As per information received from Department of Agriculture & Cooperation and farmers Welfare (DAC&FW), it has been agreed that Indian Council of Agricultural Research (ICAR) will take up monitoring of arsenic contamination in soils in collaboration with its Regional Institutes, State Agricultural Universities and Krishi Vigyan Kendras with financial support of DAC&FW. Besides, States have been advised to formulate proposals for monitoring as well as adoption of preventive measures for funding under Rashtriya Krishi Vikas Yojana Scheme (RKVY).

ICAR has informed that a meeting under the Chairmanship of Secretary (A&C) was organized by DAC&FW and as per request of DAC&FW, a team of scientists from ICAR and State Agriculture University (Bidhan Chandra Krishi Viswavidyalaya) visited arsenic affected villages of West Bengal on 17.08.2015 followed by a wrap-up meeting on 18.08.2015 and suggested modalities along with the tentative budget estimate to carry out monitoring work.

1.34 The Committee are pleased to note that pursuant to their recommendation, responsibility for monitoring arsenic build up in soils, crops, and vegetables to a particular Ministry/ Institution has been entrusted to the Indian Council of Agricultural Research (ICAR). The Committee however reiterate that National Sample Survey should be conducted to ascertain all water quality problems and an appropriate remedial plan devised. The Committee, therefore urge the Ministry to furnish the

concrete action taken / proposed to be taken in this regard including on the findings of the ICAR.

G. Arsenic Removal Devices

(Recommendation Serial No. 13)

1.36 As the Ministry of WR, RD & GR, informed that most of the Arsenic removal devices had failed to produce satisfactory results mainly due to shortcomings in operations and maintenance (O&M), the Committee recommended that appropriate steps should be taken to enlist community participation to operate and maintain the Arsenic removal devices in the Arsenic contaminated areas. The Committee also recommended that further R&D efforts need to be undertaken to address the problems relating to O&M and Arsenic testing kits should be distributed for free in affected areas.

1.37 The Ministry in the ATR informed that M/o Drinking Water & Sanitation reserves 3% of National Rural Drinking Water Programme (NRDWP) allocation to all the States for water quality monitoring and surveillance activities, which, inter-alia, also includes procurement of Field Test Kits (FTKs) for regular testing of contamination of drinking water sources. However, FTKs do not include detection of Arsenic contamination. Arsenic is measured separately with hydride generation method using Arsenic Test Kit i.e., Arsenator, in the field. Arsenic Test Kits are relatively very costly (as compared to FTKs, which are used for testing of general parameters) and also require certain degree of skill. In States such as West Bengal, where Arsenic contamination is more pronounced, Arsenic testing is done in block level water testing laboratories.

1.38 The Committee in the original Report had recommended for free distribution of arsenic testing kit in affected areas and had urged the Ministry to take appropriate steps to enlist community participation to operate and maintain arsenic removal devices in contaminated areas. The Ministry, instead of initiating appropriate action for implementing the recommendation, has simply shifted the onus on the Ministry

of Drinking Water and Sanitation stating that 3% of national Rural drinking water programme (NRDWP) allocation to all States are reserved for water quality monitoring and surveillance activities which also include procurement of Field testing Kits (FTKs). Notably, FTK do not include Arsenic contamination and that the Arsenic Testing Kit are stated to be very costly. The plea that the Arsenic Testing Kits are very costly is not acceptable to the Committee since it is a serious question of life, health and livelihood of arsenic affected people. The Committee, therefore, reiterate that the Ministry must take up the matter with other concerned Ministries and State Governments and apprise them of the steps taken in this regard. Further, the matter may be taken up with the Ministry of Finance for allocation of more funds so that necessary FTKS become available to the effected people.

H National Water Policy

(Observations/Recommendations Serial No. 22)

1.39 The Committee in the original Report found that the problem of ground water Arsenic contamination, in spite of being very grave, has not received deserved attention due to lack of its focus in the National Water Policy-2012. The Arsenic contamination in ground water was first reported almost four decades ago and presently spread over 96 districts in 12 States. In view of the seriousness of the problem, the Committee had urged that there should be a specific focus in the National Water Policy to address this humongous problem, by appropriate addendum to the National Water Policy-2012.

1.40 The M/o WR, RD &GR in their ATR simply stated that concern of the Hon'ble Committee has been noted and the matter is under consideration of the Ministry.

1.41 The Committee note that the inclusion of ground water arsenic contamination in the National Water Policy-2012 is under consideration of the Ministry. The Committee are optimistic that a positive view would be taken in the matter in view of the seriousness and magnitude of the problem and they would be apprised in due course.

I. Separate Budgetary Head

(Observations/Recommendations Serial No. 23)

1.42 As there is no separate budgetary allocation for Arsenic related issues or for that matter for any water quality issues the Committee strongly recommended that there should be a separate budgetary head of expenditure for water quality with a sub-head for Arsenic contamination in order to adequately meet the fund requirements. There should be separate budgetary head for the proposed National Programme for Ground Water related Health Problems with sufficient funding.

1.43 Referring to the existence of (i) provision for spending up to 67 % of the funds under National Rural Drinking Water Programme (NRDWP), for tackling water quality problems in the Country and (ii) 5% of the NRDWP funds (over and above 67%) for Water Quality in those states with habitations affected by excess chemical contamination (highest priority to Arsenic and Fluoride) and with high priority districts affected by Japanese Encephalitis/ Acute Encephalitis Syndrome, (iii) a scheme on installation of Community Water Purification plants as short term measure in all remaining Arsenic affected habitations by March, 2017 for providing 8-10 lpcd (litres per capita per day) of safe water for drinking and cooking purposes, the Ministry replied that there is no need of creation of a separate budgetary head for Arsenic mitigation at this stage, as this will also require change in NRDWP Guidelines.

1.44 In the updated ATR, as mentioned elsewhere in the report, the Ministry have stated that when the maximum permissible limit of arsenic is maintained at 0.05 mg/l, an outlay of ₹ 268 crores for short term solution (by providing community water

purification plant including seven years O&M) and ₹ 1268.69 crores for long term and sustainable solution (taking up water supply projects) i.e., nearly ₹ 1530 crores is required. However, if maximum permissible limit of as is considered at 0.01 mg/l, an amount of ₹ 1805.04 crores for short term (by providing community water purification plant including seven years O&M) and ₹ 6319.56 crores for long term solution (taking up water supply projects) i.e. nearly ₹ 8124 crores is required.

1.45 The M/o H&FW (Department of Health) informed that Indian Council of Medical Research (ICMR) has constituted an Expert Group under the Chairmanship of Dr. D.N. Guhamajumdar, and that this Group is scheduled to meet on 01.06.2015 in ICMR to review the currently available treatments for arsenic related diseases and to suggest areas for future focused research. Therefore, an action plan and the likely financial implications in implementation of the said plan can be formulated and quantified only after the Group meets and submits its report.

1.46 In view of the prevalence of arsenic contamination of ground water in 12 states covering 96 districts and impacting adversely the life and livelihood of 70 million people for a long time, the Committee had recommended a separate budgetary head for tackling arsenic contamination of groundwater and its impact on population and the animals. Since the Ministry seems to be content with the extant provision of NRDWP for addressing water quality issues, the Committee reiterate their earlier recommendation that a separate budget head should be created for arsenic for monitoring effectiveness of expenditure to combat the menace of arsenic.

1.47 The Committee find that Indian Council of Medical Research (ICMR) has constituted an Expert Group under the Chairmanship of Dr. D.N. Guhamajumdar. The Committee would like to be apprised of the dates of the meetings held by the expert Committee and the outcome thereof.

J. Awareness Campaign

(Observations/Recommendations Serial No. 25)

1.48 The Committee in the original Report observed that public awareness campaigns to make people aware about Arsenic contamination in ground water and its impact on human health do not appear to have created sufficient awareness about the problem. CGWB has reportedly organized several awareness generation programmes regularly in the form of mass awareness programme, painting competition, water management and training programme wherein students are one of the targeted groups. The Ministry of Drinking Water and Sanitation provides funds through NRDWP to focus on awareness generated activities in Arsenic affected habitations. The Ministry of Health & Family Welfare, however, have not undertaken any specific awareness raising activity in health effects of Arsenic contaminated water despite the recommendation of a Task Force of Planning Commission in the year 2007. DARE has claimed that farmers' awareness programme, workshop, training programme and medical check-ups have been organized to educate people of affected areas under the National Agricultural Innovation Project (NAIP) on 'Arsenic in Food Chain: Cause, Effect & Mitigation' between 2008-12. The Committee felt that frequent and sustained campaigns through print and electronic media would also be necessary in addition to other local programmes mentioned above, for effective awareness campaign.

1.49 A joint campaign with Ministry of Drinking Water and Sanitation has already been agreed to. However, incremental funding is required for this, since existing IEC budget is limited.

1.40 In response to Committee's recommendation for frequent and sustained campaigns through print and electronic media in addition to existing ones implemented by various Ministries, the Committee have been informed that a joint campaign with MDWS has been agreed which requires incremental funding. The Committee urge the Ministry to take up the matter of funding at appropriate forums

and ensure effective joint awareness campaign with Ministry of Drinking Water and Sanitation to achieve the desired results.

CHAPTER II

Recommendations/Observations which have been accepted by the Government

Observation/Recommendation (Sl. No. 1)

High Arsenic content in ground water is of great concern to the Committee as it affects the human/animal/soil/plants system and has caused over one lakh deaths and 2 to 3 lakhs of confirmed cases of illness. The Committee's examination of "Occurrence of High Arsenic Content in Ground Water" reveals that as many as 96 districts in 12 States have been affected by Arsenic contamination in ground water with Arsenic level of more than 3mg/l in one State as against the permissible limit of 0.01mg/l. 70.4 million people have been exposed to Ground Water Arsenic contamination in 35 districts of six States alone. Abnormalities have been detected in 40% of animals in Arsenic affected areas. The Committee are shocked to learn that in spite of the severity of Arsenic contamination and its spread in different States over the last three decades, there have been no coordinated efforts to tackle the menace and there is no centralized authority to address the issues concerning Arsenic contamination. There are no data from Government sources about the Arsenic diseased people, animals and plants. There are serious gaps in monitoring and also in research efforts. There is no reference to Arsenic contamination in National Water Policy 2012. There is no separate budgetary allocation to deal with Arsenic issues. Though a Vision Document entitled "Mitigation and Remedy of Ground Water Arsenic menace in India" was prepared by the National Institute of Hydrology (NIH) and the Central Ground Water Board (CGWB) in the year 2010, no concerted action is visible. The Succeeding paragraphs of the Report deal with these issues in detail.

Reply of the Government

(i) For coordinated approach, an 'Inter-Ministerial Group (IMG)' on 'Arsenic Mitigation' has been constituted under the Chairmanship of Mission Director, National Water Mission, MoWR, RD & GR. IMG has members from concerned Ministries/Departments as well as representatives from affected States.

It was decided by IMG that all Ministries/ Departments would submit their Action Plan along with budgetary requirements for Arsenic Mitigation. Action Plan from six Ministries / Departments and seven States have been received which are enclosed as **Annexure**.

IMG has now been made into Standing Group, which will (a) over-see the implementation of Action Plan of the various Ministries/ Departments; (b) reconcile data; (c) guide the entire program and; (d) coordinate the efforts of all Stakeholders.

(ii) Desirability of modification in National Water Policy, 2012 to bring in more focus on Arsenic mitigation is under consideration.

(iii) M/o Health & Family Welfare have constituted a Task Force, Chaired by the DG, Indian Council of Medical Research (ICMR) having members from M/o WR, RD & GR, M/o Drinking Water & Sanitation; AIIMS; Planning Commission; NCDC; CBHI etc. with following Terms of Reference:

(a) to workout modalities of doing a robust mapping of areas affected by high Arsenic content in ground water.

- (b) to suggest an intervention strategy to address health issues arising out of high Arsenic content in ground water, including treatment protocols.
- (c) to suggest methods for carrying out intensive awareness rising activities with regard to drinking Arsenic contaminated water.
- (d) to suggest methods of working with allied departments, like that of Drinking Water and Sanitation on how to bring about concerted action to contain the ill effects of Arsenic poisoning.

Further, ICMR has constituted a seven member Expert Group comprising experts from various fields to discuss the available modalities of the treatment alongwith discussions on the current gaps and areas, where future medical research can be directed to find medical cure for the Arsenic related disease. It is expected that at least 3-5 areas would be identified, wherein, research can be focused. Budget of Rs. 1.5–2 crore may be required for each area.

Observation/Recommendation (Sl. No. 3)

According to the finding of Indian Council of Agricultural Research (ICAR), more than 90 per cent of the total ground water in Arsenic affected areas is used for irrigating crops. Many investigators consider water-soil-crop-food transfer, cooking water and direct ingestion of Arsenic contaminated water as the major exposure pathways of Arsenic as reported by the vision document of NIH and CGWB. As the people take contaminated water along with contaminated food, the chances of damage become greater. The food crops sold off to inhabitants of uncontaminated regions lead to their consumption of Arsenic contaminated food. The domestic animals in Arsenic affected areas regularly consume Arsenic laden drinking water, fish and food. Consumption of meat from such infected animals, causes Arsenic intake. All these show the great danger of Arsenic spread and call for urgent steps to ensure proper Ground Water management to minimize use of Arsenic rich ground water for irrigation purposes. The Committee stress that remedial measures should be taken in this regard without loss of time.

Reply of the Government

Indian Council of Agricultural Research (ICAR) have stated that under All India Coordinated Research Project (AICRP), on Irrigation Water Management, a project viz. “Studies of Arsenic contamination and management in soil-plant-water in shallow tube well irrigated farming areas of Nadia district (West Bengal)” has been initiated at Gyeshpur centre, West Bengal. The project will study reduction of Arsenic accumulation in plants, humans and animals including cattle.

Comments of the Committee

(Please see Para No. 1.11 of Chapter I)

Observation/Recommendation (Sl. No. 4)

The Committee are dismayed to learn that source of Arsenic in ground water through natural processes in Ganga-Brahmaputra Plain has not been fully established during the last almost four decades.

According to the M/o WR, RD & GR, elevated level of Arsenic in ground water is caused largely by natural process and partly due to anthropogenic activities like application of fertilizers, burning of coal, leaching from coal-ash tailings and from mining activity. There are several hypotheses propounded by scientists for the mechanism of release of Arsenic into ground water by natural as well as anthropogenic activity, as described in section 2 - Chapter 01 of this Report. It has been, stated that sources of Arsenic in Ganga-Brahmaputra plain is mostly sediments having Arsenic bearing minerals. However, the process of release of Arsenic into ground water particularly the local variation in the concentration of Arsenic is yet to be fully understood, as it depends on various factors such as physico -chemical conditions, hydro-geological characteristics of aquifers, dynamic nature of aquifers, presence of Arsenic bearing minerals in the sediments, etc. necessitating micro level studies. The Committee hardly need to stress that identifying the geogenic source of contamination is necessary to identify appropriate mitigation methods. It is not clear why no attempt has been made to identify the real cause of Arsenic in ground water. No geogenic cause has been pointed out for the Arsenic contamination in ground water. The Committee recommend that a time bound programme be implemented for identifying sources to conclusively establish the mobilization process which helps in Arsenic release from minerals to ground water.

Reply of the Government

IMG has directed National Institute of Hydrology (NIH), Roorkee to take up a study on genesis of Arsenic occurrence in Ganga Brahmaputra basin.

Comments of the Committee

(Please see Para No. 1.14 of Chapter I)

Observation/Recommendation (Sl. No. 5)

The Committee hold that there is no scientific basis for the Bureau of Indian Standards (BIS) to prescribe the maximum permissible limit for Arsenic in drinking water as 0.05mg/l higher than the World Health Organisation's (WHO) standard of 0.01mg/l. BIS has pleaded that relaxed standard of Arsenic limit was effected in view of abundance of Arsenic in ground water in several areas of the country and non-availability of alternate sources. The Committee do not accept this stand and would caution that there should be no compromise on the health of the people. It is the duty of the State to improve the public health which includes the provision of safe drinking water as enshrined in Article 47 of the Directive Principles of the State Policy of

the Constitution of India. The Committee, therefore, urge that the relaxed Arsenic permissible limit of 0.05mg/l in drinking water should be done away forthwith and acceptable limit of 0.01mg/l ensured.

Reply of the Government

M/o Consumer Affairs have informed that the amendment to IS 10500:2012 has been finalized and Extra-Ordinary Gazette Notification has been sent for issuance. Thus, the process of revision of limit of Arsenic from 0.05 mg/l to 0.01 mg/l has been completed.

Observation/Recommendation (Sl. No. 7)

No convincing reasons have been given by the Central Ground Water Board (CGWB) as to why 4,504 out of its 12,946 water quality monitoring stations have been located disproportionately in just four states viz. Orissa, Madhya Pradesh, Maharashtra & Karnataka. The CGWB monitors ground water quality through a network of 12,946 ground water observation wells with the objective of, *inter-alia*, periodic monitoring of geogenic contamination of ground water. The Committee, in this connection note that water quality monitoring is done not only by CGWB but also by Central Pollution Control Board (CPCB), States Pollution Control Boards (SPCBs), Central Water Commission (CWC) and National River Conservation Directorate (NRCD). The Committee emphasize that there should be no duplication of water quality monitoring efforts. The Committee desire that additional water quality monitoring stations being set up by CGWB should be located in such places as to conform to a rationalized and optimized network of water quality monitoring stations.

Reply of the Government

It is proposed to establish 35000 numbers of additional monitoring wells during the Twelfth Plan Period. Till June 2015, 7790 number of additional wells have been established which will also be used for water quality monitoring once in a year.

The number of observation wells in a State is arrived at the end of an optimizing exercise.

The four States of Odisha, Madhya Pradesh, Maharashtra and Karnataka are amongst the largest States in the Country and have varied hydro-geological conditions, which necessitate a large number of observation wells.

35,000 additional wells will also be established after an optimizing exercise and will be concentrated in States/Regions, where the numbers of observation wells are less.

Central Ground Water Board (CGWB) and Central Pollution Control Board (CPCB) have entered into a Memorandum of Understanding (MoU) which, *inter-alia*, enjoins both the organizations to avoid repetition of quality monitoring of observation wells.

The observation of the Committee is noted and additional water quality wells will be located so as to conform to a rationalized and optimized network of water quality monitoring stations.

Observation/Recommendation (Sl. No. 9)

It transpired during the examination of the subject that the functioning of CGWB is constrained by paucity of staff. As against its sanctioned strength of 4195 personnel, 1170 posts are lying vacant. It is obvious that no organization can function efficiently and effectively unless there is optimum manpower. The Committee recommend that necessary steps should urgently be taken to ensure that CGWB has full complement of staff at the earliest.

Reply of the Government

As on 1st March, 2015, the total number of sanctioned posts are 4160 (filled-2908 and vacant-1252). A proposal for revival of 435 posts is under consideration in the Ministry. 98 posts have been revived with the approval of the Ministry of Finance vide order dated 16.01.2015.

Recruitment process for the vacant posts has been initiated.

The Ministry in the updated replies stated as under :-

As on 1st March, 2015, out of 1233 vacant posts, 660 are numbers of Direct Quota vacancies, 568 are numbers of promotion quota vacancies and 5 numbers Ex-Cadre vacancies.

For Direct Quota vacancies, out of 660, 435 posts were proposed for revival as remaining 225 posts were not lying vacant for more than one year at that time.

Details of action taken with respect to filling up of posts as on 1st March, 2015 is given as Annexure Ia.

As on 1st April, 2016, out of 1167 vacancies, 706 are number of Direct Quota vacancies, 453 are number of promotion quota vacancies and 8 numbers of Ex-Cadre vacancies.

For Direct Quota vacancies, 249 posts are proposed for revival and matter is under submission for approval of M/o Finance. Remaining 450 posts in different categories are lying vacant due to some administrative reasons.

Details of action taken with respect to filling up of posts as on 1st April, 2016 is given as Annexure Ib.

Observation/Recommendation (Sl. No. 10)

The Committee are startled to hear from the Ministry of Environment & Forests that monitoring of water quality over the years by the Central Pollution Control Board (CPCB) at 2500 locations (covering 445 rivers, 45 drains, 807 ground water stations etc. spread over all the 29 States and 06 Union Territories) does not reflect any detectable presence of Arsenic contamination at any of the monitoring locations. The Committee suspect that the information displayed in the CPCB's website as on 20-11-2014 suggests a different story.

Arsenic parameter is nowhere in the list of chemical analyses of CPCB, as evident from the list of NABL accredited analytical parameters displayed in the website. Obviously, CPCB's monitoring cannot show any Arsenic contamination. The Committee strongly recommend that there should be an immediate relook at the testing parameters by the M/o EFCC / CPCB and the lacuna, if any, in this regard should be addressed. The Committee need to be apprised of the factual position and action proposed in this regard.

Reply of the Government

- (i) Central Pollution Control Board (CPCB) had conducted monitoring of Arsenic affected areas during the year 2005-2006 and reported the Arsenic problems and assessed measures taken for removal of Arsenic from drinking water in the States of West Bengal and Bihar.
- (ii) It has been decided by the Group of Officers (GoO) in a meeting held on 13.07.2015 that CPCB (MoEFCC) will issue clear instructions to State Pollution Control Boards (SPCBs) for testing of Arsenic in soil, water and effluents.
- (iii) The existing network of 807 ground water quality monitoring stations of CPCB does not cover Arsenic affected areas; hence Arsenic contamination was not reported. The monitoring network of CPCB is not adequate to represent entire ground water quality in the Country; hence CPCB is collaborating with CGWB, who has a monitoring network of more than 18000 stations in the Country to compile the data pertaining to ground water quality in the Country.
- (iv) CPCB Labs are NABL accredited (15/09/2014 to 14/09/2016) for analysis of Arsenic (AAS method based on APHA (22nd edition) 3114 B: 2012 with detection limits (0.005 mg/l to 2.0 mg/l). CPCB Labs are also IS 18001: 2007 certified by Bureau of Indian Standards (BIS) for Occupational Health and Safety Management Systems (11/12/2014 to 10/12/2017).

Observation/Recommendation (Sl. No. 11)

Precious little has been done by Water Quality Assessment Authority (WQAA) constituted in the year 2001 to deal with, *inter-alia*, any environmental issue concerning surface and ground water quality and reviewing the status of quality of natural water resources. One of the achievements of WQAA is stated to be regarding "minimum environmental flows in Indian rivers". However, on closer scrutiny, it is observed that there is hardly any worthwhile progress during the last 11 years except for constituting a working group in the year 2003 which took four years to submit its report in 2007, followed by constitution of a committee for implementing the working group's recommendations which submitted its report in 2009. Eventually, the recommendations of the Committee have not been accepted by WQAA in its meeting held on 30th May, 2013. Strangely, WQAA's mandate excluded quality issues arising due to geogenic aspect. This lacuna has been corrected only recently by revision of its mandate. The Committee suggest that WQAA should focus on monitoring and assessment of water quality of surface water/ground water and address all related aspects holistically. For this purpose, the Committee recommend that sufficient budgetary provisions be made available for equipping WQAA with sophisticated equipments and trained human resource. This would bring in more efficient functioning of WQAA.

Reply of the Government

For rationalization of its Terms of References, WQAA constituted a Sub-Committee for 'Re-evaluation of Powers and Mandates of WQAA' under the Chairpersonship of Advisor, NRCD, MoEFCC. The Sub-Committee recommended that WQAA should focus on monitoring and assessment of water quality and address all the related aspects holistically and accordingly, suggested modifications in the Authority's powers, mandate and the composition. Authority in its 11th meeting, referred the matter to its Executive Committee (EC) headed by Special Secretary, MoEFCC for review. The EC in its 2nd meeting held on 13th March, 2015 agreed to the recommendations of the above Sub-Committee and decided that the same be put-up in the next

meeting of WQAA for approval. The draft notification regarding revaluation of composition mandate and powers of WQAA will be sent to M/o Law & Justice for vetting.

WQAA does not analyze the water quality samples. The samples are analyzed by the technical departments such as Central Water Commission (CWC), CGWB and CPCB. Based upon the information received from them, the Authority takes action as per its mandate. So, budgetary provisions are not required by the Authority for equipping it with sophisticated equipment and trained human resource.

Observation/Recommendation (Sl. No.12)

Unfortunately, no monitoring of Arsenic build-up in soil, crops and vegetables has been undertaken by any organisation. DARE has stated that ICAR is not monitoring the Arsenic build-up in soils. DAC claimed that M/o WR, RD & GR is mandated for periodical assessment of Arsenic contamination in ground water including Arsenic build-up in soils. The M/o WR, RD & GR have informed that soil analysis for Arsenic contamination is not carried out by CGWB. M/o EFCC and CPCB have not done any study on the build-up of Arsenic in soil, crops and vegetables. The Committee never expected that their queries on issues of national importance would be shuttled from one Ministry to another without yielding desired information. The Committee desire that the Cabinet Secretary should sort-out the issue and intimate the Committee as to whose responsibility is it to monitor Arsenic build-up in soils, crops and vegetables and ensure that necessary steps are taken in this regard under intimation to the Committee. The Committee further desire that a special National Sample Survey should be conducted to ascertain all water quality problems and to devise an appropriate remedial plan. The Committee recommend that there should be a mechanism for constant monitoring of contamination levels in water and soil throughout the country for taking timely corrective measures.

Reply of the Government

Matter is under consideration of Ministry of Agriculture.

In the updated replies the Ministry stated as under:-

As per information received from Department of Agriculture, Cooperation & Farmers Welfare (DAC&FW), it has been agreed that Indian Council of Agricultural Research (ICAR) will take up monitoring of Arsenic contamination in soils in collaboration with its Regional Institutes, State Agricultural Universities and Krishi Vigyan Kendras with financial support of DAC&FW. Besides, States have been advised to formulate proposals for monitoring as well as adoption of preventive measures for funding under Rashtriya Krishi Vikas Yojana Scheme (RKVY).

ICAR has informed that a meeting under the Chairmanship of Secretary(A&C) was organized by DAC&FW and as per request of DAC&FW, a team of scientists from ICAR and State Agriculture University (Bidhan Chandra Krishi Viswavidyalaya) visited Arsenic affected villages of West Bengal on 17.08.2015 followed by a wrap-up meeting on 18.08.2015 and suggested modalities along with the tentative budget estimate to carry out monitoring work. As a follow-up action,

officials from DAC&FW visited West Bengal during 29th September to 1st October, 2015 to take stock of the situation.

Comments of the Committee

(Please see Para No. 1.34 of Chapter I)

Observation/Recommendation (Sl. No. 16)

The Committee recommends that there should be an annual conference of Health Ministers of all States to discuss and decide about ways and means to address water quality related health problems and decide appropriate remedial measures. This forum can also be used for annual assessment of progress and the results achieved.

Reply of the Government

M/o Health & Family Welfare has agreed to discuss the issue of Arsenic related diseases in an Annual Conference of Health Ministers. However, to be more meaningful, such a Conference should have participation of Ministers of Health Department, alongwith other Departments responsible for providing clean drinking water.

Observation/Recommendation (Sl. No. 17)

The Committee appreciate the commendable work done by the Department of Science and Technology (DST) and the Council of Scientific and Industrial Research (CSIR) in promoting a network of Researchers from leading R&D/academic institutions working in the area of Arsenic. The work done by CSIR-National Botanical Research Institute (NBRI) in identifying Arsenic safe rice genotype CN1794- 2CSIR-NBRI deserves a special mention. This variety is proposed to be released for cultivation in vast Arsenic affected belts of West Bengal. The Committee also note that the DST's promotion of research efforts initiated in 2007 have resulted in development of 07 different devices for Arsenic removal. The Committee in this connection would suggest that DST/CSIR should explore collaboration with global R&D institutions in Arsenic related areas particularly for *in-situ* remediation of Arsenic from aquifer system for which no R&D work has been taken up by any Indian Institute.

Reply of the Government

- A 10000 litre per day Pilot Plant at Dhaphdhabi High School near Kolkata based on Electro Coagulation Arsenic Remediation (ECAR) technology developed by Lawrence Berkeley National Laboratory (LBNL) in participation with Luminous Industries and Jadavpur

University is complete and under commissioning. The plant would benefit 2800 people including school children.

- Lehigh University in Pennsylvania has developed an efficient adsorbent HAIX-Zr or HIX-Nano-Zr, with a cosmetically anion exchanger, inside which zirconium oxide nanoparticles have been dispersed. Zirconium is innocuous with no adverse impact on human health and is unregulated in drinking water. The adsorbent is now being made in India and a Pilot plant based on this technology has been set up at Ashok Nagar by Rite Water Solutions, Nagpur and an NGO, Society with Human Face (SHF). Possibilities of collaboration with Dutch institutions are also being explored. A Dutch delegation comprising of Small and Medium Industries and knowledge institutions is expected to visit.
- A compendium of R&D initiatives of D/o Science & Technology regarding Arsenic has been finalized, printed and disseminated.
- A capacity building programme for young water professionals with University of Nebraska, Lincoln (UNL) has been launched to handle water related challenges.

Observation/Recommendation (Sl. No. 18)

The Committee find that in the areas of medical curative treatment and the causes, there has been no centralized research. A representative of the M/o H&FW admitted during his oral evidence before the Committee that medical research of Arsenic causes and treatment has been inadequate. The Committee need not over emphasis that there should be a focused research for medical cure of Arsenic diseases. The Committee are sure that any discovery of cost effective medicine and treatment procedure will be well received not only in our country but also in other Arsenic affected countries, as there is huge population of Arsenic affected people world-wide.

Reply of the Government

Indian Council of Medical Research (ICMR) has constituted a seven member expert group comprising experts from various fields including dermatology, oncology and tropical medicine to discuss the available modalities of the treatment along with discussions on the current gaps and areas where the future medical research can be directed to find medical cure for the Arsenic related disease. It is expected that at least 3-5 areas would be identified, wherein, research can be focused. Budget of Rs. 1.5–2 crore may be required for each area.

ICMR is in touch with the Arsenic affected States and has requested the States to forward available information of the districts identified to have Arsenic contamination between 0.01-0.05 mg/l. Once the information is available for 2-3 States, a multi-site study would be planned to survey the representative population for sign and symptoms of disease due to Arsenic exposure. As of now, only Bihar and Punjab have provided this information to plan the study.

Observation/Recommendation (Sl. No. 19)

The Department of Agricultural Research and Education (DARE) has pointed out the need for a systematic search for phyto-accumulating or phyto-excluding plant species to identify species which effectively detoxifies within the plant body by its metabolic process. By way of remedial options to combat Arsenic problem, DARE has suggested, among other things, conjunctive use of ground and surface water, recharge of ground water by rain water harvesting, increased use

of farmyard manure and cost effective phyto-remediation options. Unfortunately, it appears that DARE has not pro-actively promoted these measures and generated an awareness about the Arsenic impact on agriculture. So much so even the Secretary, Department of Agriculture and Cooperation was not aware of Arsenic impact on plants and vegetations. The Committee are unhappy that so far no comprehensive strategies have been worked out to ensure that Arsenic laden agricultural produce is not consumed by human beings and live stock. The Committee exhort DARE that in consultation with the Department of Agriculture and Cooperation and other concerned Ministries, appropriate strategies should be worked out and implemented within three months of presentation of the report under intimation to the Committee.

Reply of the Government

Indian Council of Agricultural Research(ICAR) have stated that the Council through Gyeshpur center of All India Coordinated Research Project (AICRP) on Water Management is engaged in research to develop remedial measures to ensure safe use of ground water for agricultural use in Arsenic affected areas of the Country.

DARE/ICAR have also stated that “D/o Agriculture & Cooperation (DAC) may intimate concerned State Agriculture Department to take appropriate action in this regard based on the remedial measures suggested by DARE.”

ICAR under AICRP on Irrigation Water Management has already initiated a project “Studies of Arsenic Contamination and Management in Soil-Plant-Water in Shallow Tube Well Irrigated Farming Areas of Nadia District (West Bengal)” at Gyeshpur centre, West Bengal so as to reduce Arsenic accumulation in plants/ humans/ animals including cattle.

Central Soil Salinity Research Institute (CSSRI), Karnal is working on microbial bio-remediation of Arsenic in waste water. The centre may take up research programme on phyto-accumulating or phyto-excluding plant species to detoxify Arsenic within plant. Once the process is developed, ICAR will work out appropriate strategies in consultation with DAC and other concerned Ministries for its implementation.

Department of Animal Husbandry & Fisheries, Ministry of Agriculture, have stated that Action Plan alongwith Budgetary requirements for the revised permissible limits of the Arsenic in water should be sought from M/o Drinking Water & Sanitation for availability of drinking water for animals and for the affects of Arsenic water on animals under the revised permissible limits from the Indian Council of Agricultural Research.

It has been decided by the Group of Officers (GoO) in a meeting held on 13.07.2015 that D/o Animal Husbandry, Dairying and Fisheries will launch Information, Education & Communication (IEC) campaign to make public aware of the effects of Arsenic in livestock.

DAC have stated that they have already taken various interventions, namely, discouraging cultivation of boro-rice, dwarf variety of rice and leafy vegetables in Arsenic affected areas under its on-going programmes. In addition, DAC is promoting Integrated Farming System (IFS) and On Farm Water Management (OFWM) for rain water conservation/harvesting and use of micro-irrigation system coupled with practice of organic farming, use of vermin compost/ FYM/ green manure for prevention of Arsenic contamination in food chain. ICAR has also been requested for development of Arsenic resistant crop varieties, low water requiring crops, technology for replacement of boro-rice cultivation etc.

Observation/Recommendation (Sl. No. 20)

The Secretary, Department of Agriculture and Cooperation was candid in his admission that the Department had so far not thought of the ground water Arsenic impact on agriculture and

promised to adopt such agricultural practices as to promote crop varieties which are less susceptible to uptake of Arsenic and other measures which would minimize Arsenic in agricultural produce. It is a matter of satisfaction to the Committee that the Committee could create awareness at very high level about ground water Arsenic impact on the agricultural sector. The Committee recommend that the remedial measures suggested by DARE should be incorporated in the crop husbandry programme and the measures vigorously promoted to minimize the Arsenic impact.

Reply of the Government

Response from DAC is awaited.

The Ministry in the updated replies stated as under :-

DAC&FW has advised Arsenic affected States to take up measures recommended by ICAR such as discouraging cultivation of boro-rice, dwarf variety of rice, leafy vegetables in Arsenic affected areas under its on-going programmes. Besides, DAC&FW is promoting Integrated Farming System (IFS), On Farm Water Management (OFWM) for rain water conservation, use of micro irrigation system under Prime Minister Krishi Sinchayee Yojana (PMKSY) coupled with practices of organizing farming under dedicated scheme, namely, Paramparagat Krishi Vikas Yojana, use of vermin compost/ FYM/ green manure for prevention of Arsenic contamination in food chain. States have been advised not to allow construction of shallow tube-wells in Critical and Semi-Critical areas and use of irrigation water from tube-wells of more than 80 meter depth. Rice Research Station, Chinsurah, West Bengal has developed Arsenic tolerance rice variety i.e., IET 4786 (Shatabdi) for which large scale field demonstrations are being organized before releasing the variety to end users. In addition, local Doordarshan and All India Radio are regularly broadcasting interviews of scientists of BCKV on ill effects of Arsenic contamination and its management in food cycle. Also, DAC&FW had organized a video conference chaired by Additional Secretary, inviting Arsenic affected States on 24.09.2015, wherein problems and solutions of Arsenic contamination in soil were discussed. In this video conference most of the States were present and were categorically advised for in-situ rain water conservation and its utilization and, if required, tube-well water, only in Safe zone other than Dark/Grey zone, as notified by CGWA, could be used coupled with promotion of micro irrigation systems. States have agreed for promotion of cultivation of Arsenic resistant rice variety i.e., IET-4786 (Shatabdi).

Observation/Recommendation (Sl. No. 21)

According to an expert, Arsenic has affected over 150 million people worldwide through consumption of Arsenic contaminated drinking water. It is learnt that as many as 38 countries including, USA, UK, Canada, Australia and China have been affected by high Arsenic in ground water. DARE has pointed out that Arsenic concentration in ground water is of great concern to the world since it affects the soil, plants, animals-human systems. The Committee feel that India can render possible help to other Arsenic affected countries with remediation technologies, Arsenic removal devices and Arsenic safe crop genotypes, etc. and would urge the Government to take suitable steps in this regard.

Reply of the Government

Noted for Compliance.

Observation/Recommendation (Sl. No. 24)

The M/o EFCC have reportedly notified general standards for environmental pollutants which include industrial effluents also for various recipients sources, *inter-alia*, land for irrigation. The limit for discharged Arsenic in waste water has been defined for all the sources as 0.2mg/l. As already stated in a preceding paragraph, the Water Quality Assessment Authority has done nothing so far to ensure minimum environmental flows. The Central Population Control Board has not included 'Arsenic' in their chemical analyses for testing of waste water. The Committee in this connection note that analytical testing of effluents of leather tanneries conducted by IIT Kanpur in the year 2002 showed alarming levels of Arsenic, cadmium, mercury and other heavy metals. The Arsenic level of tannery effluent at Unnao was as high as 5.07 mg/l as against the prescribed limit of 0.2 mg/l. Thus, anthropogenic causes of Arsenic content in ground water and in soils have remained unaddressed. The Committee view this failure seriously and urge the Ministry of Environment & Forests to immediately look into the shortcomings and take urgent remedial steps to ensure that anthropogenic sources of Arsenic in water and soil are plugged. The Committee also recommend that there should be a survey of all industries on the river side to check the quality of their effluents and adherence to environmental standards. They should be closed if they fail to adhere to effluent standards besides being imposed heavy penalty. Huge amount of pesticides and chemical fertilizers also leach into the groundwater and river and their contents in soil and in river water should be carefully studied to take appropriate preventive steps.

Reply of the Government

Regarding studying the presence of pesticides and fertilizers in river water, CPCB has requested the five Ganga basin States to collect and submit samples to CPCB, Delhi Office for analysis of 9 trace metals and 15 pesticides as per the monitoring protocol on all the monitoring locations of river Ganga:

- (i) MoEFCC has notified industry specific discharge standards for Arsenic for Fertilizers, Pesticide manufacturing & Formulation industries and Organic Chemical industries as 0.2 mg/l and for Bullion Refining as 0.1 mg/l.

Further, general discharge standards for Arsenic have also been notified for various recipient sources i.e., surface water, public sewerage, marine coastal areas and land for irrigation as 0.2 mg/l.

- (ii) Tanneries use only Chromium in tanning process, in the form of Basic Chromium Sulphate, and the unabsorbed Chromium is discharged as the effluent. Arsenic is not used by tanneries in tanning process. Tanneries are required to provide special treatment for Chromium in their effluent through recovery and treatment so as to meet the prescribed standards for Chromium concentration already notified by MoEFCC.

During April 2012, CPCB conducted ground water sampling at 51 locations in Unnao district. Results of the analysis indicated that concentration of Chromium (Hexavalent) at all locations was below detectable level, i.e., conforming Bureau of Indian Standards (BIS) limit. Concentration of Chromium (Total) was also below detectable level at all locations except for one location, where it was observed as 0.175 mg/l.

CPCB on 28.10.2014 issued directions under Section 18 (1) (b) of the Water Act, 1974 to Uttar Pradesh Pollution Control Board to keep under close watch all tanneries in Unnao

and Kanpur region for ensuring regular compliance of prescribed norms, apart from directions to upgrade CETP/ PETPs.

- (iii) Reply awaited from MoEFCC.
- (iv) CPCB has setup a mechanism called Environmental Surveillance programme (ESS) with a purpose for carrying out surprise inspections of industrial units through its Zonal Offices. The above surprise inspections are being carried out to assess the adequacy of pollution control systems adopted by these industries and check the compliance status of pollution control standards. Based on the violation severity, action is initiated on the defaulting industries either under Sec 5 of The Environment Protection Act, 1986 or to the State Pollution Control Board (SPCB) under Sec 18(1)(b) of Air/Water Act.
- (v) Regarding studying the presence of pesticides and fertilizers in river water, CPCB has requested five Ganga basin States to collect and submit samples to CPCB Delhi Office for analysis of 9 trace metals and 15 pesticides as per the monitoring protocol on all the monitoring locations of river Ganga.

Observation/Recommendation (Sl. No. 25)

The Committee observe that public awareness campaigns to make people aware about Arsenic contamination in ground water and its impact on human health do not appear to have created sufficient awareness about the problem. CGWB has reportedly organized several awareness generation programmes regularly in the form of mass awareness programme, painting competition, water management and training programme wherein students are one of the targeted groups. The Ministry of Drinking Water and Sanitation provides funds through NRDWP to focus on awareness generated activities in Arsenic affected habitations. The Ministry of Health & Family Welfare, however, have not undertaken any specific awareness raising activity in health effects of Arsenic contaminated water despite the recommendation of a Task Force of Planning Commission in the year 2007. DARE has claimed that farmers' awareness programme, workshop, training programme and medical check-ups have been organized to educate people of affected areas under the National Agricultural Innovation Project (NAIP) on 'Arsenic in Food Chain: Cause, Effect & Mitigation' between 2008-12. The Committee feel that frequent and sustained campaigns through print and electronic media would also be necessary in addition to other local programmes mentioned above, for effective awareness campaign.

Reply of the Government

A joint campaign with Ministry of Drinking Water and Sanitation has already been agreed to. However, incremental funding is required for this, since existing IEC budget is limited.

Comments of the Committee

(Please see Para No. 1.40 of Chapter I)

Observation/Recommendation (Sl. No. 26)

It is a matter of serious concern that in spite of grave multidimensional Arsenic problem being faced by vast parts of the country for the past decades, the Govt. have not thought it fit to identify a Central agency to tackle the Arsenic menace. Repeated queries to M/o WR, RD & GR as to who is responsible for abatement of Arsenic contamination at the Central level have not yielded any specific information. The M/o WR, RD & GR attempted to shift the responsibility by simply stating that abatement of Arsenic contamination in drinking water is in the domain of State Governments. The Committee do not approve of this stand. The very fact that the problem of Arsenic contamination is spread over 96 districts in 12 different States with huge human and animal population having been affected by Arsenic poisoning calls for immediate Central intervention. At the Central level, there are as many as seven Ministries / Departments and a number of Central organizations which are required to handle this problem, besides State Governments and their agencies. These are Ministry of Water Resources, River Development & Ganga Rejuvenation, Ministry of Drinking Water & Sanitation, Ministry of Health & Family Welfare, Department of Agriculture and Cooperation, Department of Agricultural Research and Education, Department of Animal Husbandry, Dairying & Fisheries, Min. of Science & Technology, Central Ground Water Board, Central Ground Water Authority, Water Quality Assessment Authority, Council of Scientific & Industrial Research, Indian Council of Agricultural Research, National Botanical Research Institute, Indian Council of Medical Research, etc. There should be a single authority at the Centre to look at the issue of Arsenic problem holistically and take appropriate coordinated corrective measures. The Ministry have failed to convince the Committee of any concrete action taken by them. It is callous negligence on the part of the Government that they had not taken any action in the past in this regard. It is only after the matter has been taken up by the Committee, a Core Committee headed by the Director, NIH has recommended in its report submitted on 15 October, 2014, that each of the affected States should have an 'Arsenic Task Force' spearheaded by the model 'National Arsenic Mission Task Force' (NAMTF) at Central level. It is indeed intriguing as to why the ministries and departments of the Government of India remained oblivious of the said Core Committee while deposing before the Committee. The Committee deprecate the lapse on the part of the representatives of ministries/departments concerned who appeared before them. The Minutes of the meeting of the Core Committee should be furnished to the Committee. The Committee urge the Government to ensure functioning of the Core Committee on war footing. Results of the action taken should be made available to the Committee within 3 months.

Reply of the Government

- (i) An 'Inter Ministerial Group (IMG)' on 'Arsenic Mitigation' consisting of representatives of M/o Drinking Water & Sanitation, M/o Environment, Forests & Climate Change, M/o Agriculture, M/o Consumer Affairs, M/o Health and Family Welfare, Ministry of Urban Development and Ministry of Water Resources, RD & GR has been constituted under the chairmanship of Mission Director, National Water Mission, MoWR, RD & GR. The Group also has representation from the Arsenic affected States viz. Assam, Punjab, West Bengal, Bihar, Haryana, Jharkhand, Manipur, UP, Chhattisgarh and Karnataka.
- (ii) IMG has now been made into Standing Group which will **(a)** over-see the implementation of Action Plan of the various Ministries/ Departments; **(b)** reconcile data; **(c)** guide the entire program and; **(d)** coordinate the efforts of all Stakeholders.

Observation/Recommendation (Sl. No. 27)

It was enquired from the Cabinet Secretary as to whether there is any comprehensive approach with an integrated policy, action plan and coordination for tackling different aspects of Arsenic contamination. In response, a vague reply was received on 15 October, 2014 stating that a more active engagement by different Ministries/Departments of the Central Government and

State Governments would lead to an integrated approach and action plans for mitigation of adverse impact of Arsenic on human, plant and animal health by effectively eliminating Arsenic from drinking water and food supply chain. Not satisfied with the reply, the Committee enquired whether any specific action is proposed in this regard. The Cabinet Secretariat responded on 3rd November, 2014 by stating that as regards planning of integrated approach, it has been decided to convene meeting of Committee of Secretaries with concerned Ministries/Departments soon to discuss the matter. It is strange that Cabinet Secretariat has not taken the cognizance of the existence of the Core Committee. The Committee desire that the Committee of Secretaries including those of the Ministries/Departments mentioned in the preceding para of this report should consider the matter and ensure that an integrated policy and effective co-ordination mechanism is in place for planning and implementation of all Arsenic related issues and the removal of Arsenic contamination should be taken on a Mission mode.

Reply of the Government

- (i) An 'Inter Ministerial Group (IMG)' on 'Arsenic Mitigation' consisting of representatives of M/o Drinking Water & Sanitation, M/o Environment, Forests & Climate Change, M/o Agriculture, M/o Consumer Affairs, M/o Health and Family Welfare, M/o Urban Development and M/o Water Resources, RD & GR has been constituted under the chairmanship of Mission Director, National Water Mission, MoWR, RD & GR. The Group also has representation from the Arsenic affected States viz. Assam, Punjab, West Bengal, Bihar, Haryana, Jharkhand, Manipur, UP, Chhattisgarh and Karnataka. IMG has now been made into Standing Group which will (a) over-see the implementation of Action Plan of the various Ministries/ Departments; (b) reconcile data; (c) guide the entire program and; (d) coordinate the efforts of all Stakeholders.
- (ii) Action Plan from various stakeholders have been received. Report of IMG is under preparation.

Observation/Recommendation (Sl. No. 28)

The Committee have dealt with Arsenic related issues in detail in this report. Other major contaminants viz. fluoride, iron, nitrate, salinity and other heavy metals in water are no less serious as they impact the health of millions of people. The Committee are of the view that water quality issues demand focused attention. This can be achieved only if there is a separate department for the purpose. The Committee, therefore, recommend that a separate department of water quality issues should be created within the Ministry of Drinking Water & Sanitation.

Reply of the Government

The Ministry has a full-fledged Water Quality Section, which is headed by Deputy Advisor(WQ) and comprises of Consultant (Water Quality), Under Secretary(WQ), Section Officer and other supporting staff.

The Ministry in the updated replies stated as under :-

As informed by Ministry of Drinking Water & Sanitation (MoDWS), they have decided to establish 'International Centre for Drinking Water Quality (ICDWQ) at Kolkata.

Setting up of ICDWQ has been approved by the Government of India and the same has been registered as a Society under the 'Societies Registration Act, 1860'. The ICDWQ would be fully funded and administered, under the overall guidance of MoDWS.

The basic aim of ICDWQ is to work in the area of identification, mitigation and management of drinking water quality related problems in India and abroad with focus on Arsenic and Fluoride; and to provide inputs for policy level decision making under the National Rural Drinking Water Programme (NRDWP) and in the rural drinking water sector in general.

The Centre will focus mainly on research and development activities, assessment of various treatment technologies, training, networking with all related organizations, promoting doctoral and post-doctoral studies on drinking water quality issues etc. It will cater both to rural and urban areas in India. The Centre will also cater assistance to other countries on demand.

The ICDWQ campus will have modern facilities following GRIHA green building norms for its Administrative building, full fledged R&D centre, library, auditorium, training centre and other ancillary buildings along with staff quarters, etc.

The Centre will become functional in two or three years, required for completion of the construction of buildings being taken up by the CPWD. However, it is pertinent to mention that the post of Director, ICDWQ and five more supporting posts have already been posts have already been created and the Centre will start functioning from New Delhi till the infrastructure at Kolkata is fully established.

The Current dispensation of this Ministry will adequately support ICDWQ in giving focused attention to Drinking Water Quality Problems.

CHAPTER III

Recommendations/Observations which the Committee do not desire to pursue in view of the Government's reply

NIL

CHAPTER IV

Recommendations/Observations in respect of which Government's replies have not been accepted by the Committee

Observation/Recommendation (Sl. No. 6)

The Committee are distressed to learn that there is no centralized data regarding the number of people affected by Arsenic poisoning and it shows the casual attitude on the part of the Government. The Committee have been informed that Centralised data is collected by the Central Bureau of Health Intelligence (CBHI) in relation to only the national programmes on various diseases.

Arsenic intake causes serious ailments like hyper pigmentation, keratosis, anaemia, swelling of legs, liver fibrosis, chronic lung disease, gangrene, neuropathy, cancer, etc. According to one expert, there are 2 to 3 lakhs of confirmed cases of illness and over one lakh deaths due to Arsenic poisoning. In animals too, the Arsenic poisoning causes many abnormalities. It has been stated that Arsenic is one of the most toxic elements to fish and acute exposure results in immediate death. The Committee express their strong displeasure as to why in spite of such serious diseases caused to human beings and animals, no steps were taken to collect relevant data or initiate appropriate diagnostic and curative measures. Considering the fact that there are as many as 12 Arsenic affected States and huge population affected by Arsenic poisoning, the Committee fail to understand as to why no national programme on Arsenic mitigation and treatment has been launched as recommended by the Working Group of Planning Commission. The Committee recommend that at least now, a national programme be launched in this regard and immediate steps taken to ensure regular collection of relevant data and providing appropriate diagnostic and curative measures both for human beings and for cattle by the M/o H&FW and by the Department of Animal Husbandry, Dairying & Fisheries respectively. The Committee should be apprised of the action taken in this regard.

Reply of the Government

- (i) M/o Consumer Affairs have informed that the amendment to IS 10500:2012 has been finalized and Extra-Ordinary Gazette Notification sent for issuance. Thus, the process of revision of limit of Arsenic from 0.05 mg/l to 0.01 mg/l has been completed. With the modification of the limit, the existing data will undergo a major change and may include more States/ Districts/ Populations affected by Arsenic.
- (ii) The Task Force constituted by M/o Health & Family Welfare will work out modalities of doing a robust mapping of areas affected by high Arsenic content in ground water.

(iii) In the first meeting of IMG, Central Ground Water Board (CGWB) has been asked to compile data on habitations affected by Arsenic contamination of ground water for (a) 0.01 to 0.05 ppm and (b) more than 0.05 ppm.

Chairman, IMG advised that all the State Governments may provide data to CGWB at the earliest. Arsenic concentration data should also contain the latitude and longitude details of the wells from where the samples were collected so that GIS based maps can be prepared. This will now be coordinated by IMG which has been made into Standing Group.

(iv) The 'Inter-Ministerial Group' on 'Arsenic Mitigation' constituted vide Order dated 22nd December, 2014 has been made into Standing Group, which will (a) over-see the implementation of Action Plan of the various Ministries/Departments; (b) reconcile data; (c) guide the entire program and ; (d) coordinate the efforts of all Stakeholders.

The Ministry in the updated replies stated as under :-

Ministry of Health and Family Welfare have constituted a Task Force for countering ill effects of Arsenic in Ground Water and a Committee/ Expert Group to review the currently-available treatments for Arsenic related diseases and to suggest areas for future focused research. The reports are awaited.

Similarly, ICAR has initiated a project to reduce Arsenic accumulation in plant-human-animal including cattle, the results of which are awaited.

Ministry of Drinking Water & Sanitation have also shared their plans for long term and short term solutions for Arsenic mitigation.

The consolidation of all these efforts would lead to formulation of a National Plan on Arsenic mitigation.

Further, as informed by D/o Animal Husbandry, Dairying and Fisheries, the department is implementing a Centrally Sponsored Scheme namely "Assistance to States for Control of Animal Diseases (ASCAD), under which the funds are provided for Information, Education & Communication (IEC) campaign including training of veterinarians and para-veterinarians.

The Department vide their letter dated 31st July, 2015 had already issued the advisories to the States requesting them to give wider publicity to the matter of Arsenic Contents in water through IEC campaigns, trainings, seminars conducted under ASCAD.

Comments of the Committee

(Please see Para No. 1.23, 1.24, 1.25 & 1.26 of Chapter I)

Observation/Recommendation (Sl. No.8)

Accreditation by National Accreditation Board for Testing and Calibration Laboratories (NABL) recognizes the technical competence of laboratories. The process of accreditation of CGWB laboratories was initiated in April 2011 and only 03 out of 16 chemical laboratories of CGWB (Lucknow, Chandigarh & Hyderabad) have been accredited so far. The accreditation process

involves fulfilling the requirements of standards as prescribed by NABL. The Committee see no reason why only five more labs have been targeted for NABL accreditation during the 12th Plan. The Committee urge that serious efforts should be made to get NABL accreditation for all the remaining 13 labs of CGWB before the end of 12th Plan.

Reply of the Government

The labs of CGWB at Southern Region, Hyderabad; Northern Region, Lucknow & North Western Region, Chandigarh have been accredited by NABL. The remaining labs at Western Region, Jaipur; South Eastern Region, Bhubaneswar; Central Region, Nagpur; West Central Region, Ahmedabad & North Eastern Region, Guwahati are in the process of getting NABL accreditation during XII Plan. The remaining Regions have also been advised to obtain NABL accreditation in a time bound manner.

The Ministry in the updated replies stated as under :-

The lab requires minimum 4 chemists for getting the NABL Accreditation. Since adequate number of chemists are not available in CGWB as of now the timeline has not been indicated.

A Committee has been constituted to study the working of the chemical laboratories in CGWB; to identify gaps and suggest corrective measures. These efforts will help in seeking NABL accreditation

Comments of the Committee

(Please see Para No. 1.30 of Chapter I)

Observation/Recommendation (Sl. No.13)

There are a number of Arsenic removal devices, developed by various organizations based on different scientific propositions. These devices vary in cost, size, filtering mechanisms and mechanisms of operations as summarized in Chapter III of this report.

The Committee have been informed that most of the Arsenic removal devices have failed to produce satisfactory results mainly due to shortcomings in operations and maintenance (O&M). The Committee agree with the M/o WR, RD & GR that Arsenic removal devices, whose O&M aspects are managed by community participation, could produce satisfactory performance. The Committee hope that appropriate steps will be taken to enlist community participation to operate and maintain the Arsenic removal devices in the Arsenic contaminated areas. The Committee would also recommend that Arsenic testing kits should be distributed free in affected areas. The Committee feel that further R&D efforts need to be undertaken to address the problems relating to O&M.

Reply of the Government

M/o Drinking Water & Sanitation reserves 3% of National Rural Drinking Water Programme (NRDWP) allocation to all the States for water quality monitoring and surveillance activities, which, inter-alia, also includes procurement of Field Test Kits (FTKs) for regular testing of contamination of drinking water sources. However, FTKs do not include detection of Arsenic contamination. Arsenic is measured separately with hydride generation method using Arsenic Test Kit i.e., Arsenator, in the field. Arsenic Test Kits are relatively very costly (as compared to FTKs, which are used for testing of general parameters) and also require certain degree of skill.

In States such as West Bengal, where Arsenic contamination is more pronounced, Arsenic testing is done in block level water testing laboratories.

Comments of the Committee

(Please see Para No. 1.38 of Chapter I)

Observation/Recommendation (Sl. No.14)

The Committee are displeased to note that no national health programme has so far been formulated for ground water quality related health problems as suggested by the working group of Planning Commission in the year 2011. During his deposition before the Committee, a representative of the M/o Health & Family Welfare emphasized the need to formulate a national programme in this regard and assured that a task force would be constituted to look into Arsenic issues and would be asked to submit its report by February, 2015. He also assured that funds would be provided to State Governments under National Rural Health Mission for diagnostic facilities, treatment and medicine for Arsenic diseases. The Committee expect that action is taken in this regard promptly as promised, with sufficient budgetary provision. The Committee also desire that a detailed report should be made to Parliament regularly every six months (say April and November) bringing out the efforts made and progress achieved state-wise in treatment of Arsenic affected people under the proposed National Health Programme.

Reply of the Government

The symptoms of diseases which may be caused due to Arsenic contamination of drinking water usually manifest after consumption of contaminated water over a prolonged period of time. The impact of Arsenic contamination will consequently not be visible immediately upon drinking of Arsenic contaminated water. The relevant diseases, moreover, may also be caused by factors other than Arsenic contamination. It is not easy to segregate cases of the said diseases where cause and effect is specifically linked. Separate diagnostic tests to confirm that that disease is caused due to drinking of Arsenic contaminated water may not be easily available.

A National Programme for a particular disease should normally meet the requirement of all patients suffering from the said disease. For example, a patient suffering from cancer or liver disease will need to be treated irrespective of whether the cause of the said disease was due to drinking Arsenic contaminated water over a prolonged period of time or due to some other reasons. A National Programme, therefore, should focus on providing clean drinking water to prevent Arsenic contamination related diseases. Simultaneously, the health systems need to be strengthened to meet the healthcare requirements of all persons and to get correct diagnosis and treatment for all diseases, including Arsenic related diseases.

Consequently, for the cohort of persons who have been drinking Arsenic contaminated water and for whom diseases or symptoms may be already visible or emerge in the coming years, practical approach would be to strengthen the health infrastructure in the relevant districts for which suitable funding can be envisaged under National Health Mission (NHM). The affected States would need to assess their requirements and reflect the same in the Project

Implementation Plans (PIPs). Based on the above, Ministry of Health & Family Welfare will be in a position to project the incremental fund requirement under NHM.

However, an Expert Group under the Director General of Health Services has been constituted to prepare guidelines for detection and management of Arsenicosis in India. The Expert Group has formulated draft guidelines, which upon finalization will be shared with the State Governments and other stakeholders for necessary action.

It has been decided by the Group of Officers in a meeting held on 13.07.2015 that M/o Health and Family Welfare will issue an advisory to the Arsenic affected States through NHM on the health aspects of Arsenic.

Agree to comply with the suggestion of furnishing a detailed report to the Parliament every six months or as decided by the Committee of Secretaries.

The Ministry in the updated replies stated as under :-

Ministry of Health & Family Welfare has informed that the Guidelines "Detection, Prevention and Management of Arsenicosis in India – A Field Guide" have been finalized by the expert Committee and sent to the Arsenic affected States. Concerned State Governments were advised to strengthen District/Community Health Center infrastructure for early diagnosis, management and treatment of Arsenic affected cases and for this purpose seek necessary support in the State Programme Implementation Programmes submitted under NHM.

Comments of the Committee

(Please see Para No. 1.23, 1.24, 1.25 & 1.26 of Chapter I)

Observation/Recommendation (Sl. No.23)

The Committee regret to note that there is no separate budgetary allocation for Arsenic related issues or for that matter for any water quality issues. At present, funding for water quality is made only through the National Rural Drinking Water Programme under the Ministry of Drinking Water & Sanitation. The Committee strongly recommends that there should be a separate budgetary head of expenditure for water quality with a sub-head for Arsenic contamination in order to adequately meet the fund requirements. Similarly, there is no specific budget allocation for Arsenic related diseases under the Ministry of Health & Family Welfare. Now that a National Programme for Ground Water related health problems is proposed to be formulated by the Ministry of Health & Family Welfare, there should be a separate budgetary head for the new national programme with sufficient funding.

Reply of the Government

Under the National Rural Drinking Water Programme (NRDWP), upto 67% of the funds can be spent on coverage and tackling water quality problems in the Country. M/o Drinking Water & Sanitation has given highest priority to Arsenic and Fluoride mitigation among all the parameters. Over and above, 5% of the NRDWP funds are earmarked for Water Quality and allocated to those States with habitations affected by excess chemical contamination (highest priority to Arsenic and Fluoride) and with high priority districts affected by Japanese Encephalitis/ Acute Encephalitis Syndrome. Further, physical and financial progress on water

quality for all the States is reviewed by Secretary, MoDWS on regular basis. The Ministry has also started a scheme on installation of Community Water Purification plants as short term measure in all remaining Arsenic affected habitations by March, 2017 for providing 8-10 lpcd (litres per capita per day) of safe water for drinking and cooking purposes. Since the matter is already reviewed regularly and the present system is working well, there is no need of creation of a separate budgetary head for Arsenic mitigation at this stage, as this will also require change in NRDWP Guidelines.

The Ministry in the updated replies stated as under :-

(i) MoDWS have informed that there are 1490 Arsenic affected rural habitations where 23.98 lakh people are at risk. IMIS 2015 data indicates that there are only 6 Arsenic affected States – West Bengal, Assam, Bihar, UP, Karnataka and Punjab.

In the first alternative, when the maximum permissible limit of Arsenic is maintained at 0.05mg/l, an outlay of `268 Crores for short term solution (by providing community water purification plant including seven years O&M) and `1262.69 Crores for long term & sustainable solution (taking up water supply projects) i.e., nearly `1530 Crores is required.

Total Cost : `1530 Crores (Arsenic limit at 0.05mg/l)

The no. of Arsenic affected habitations is 10028 if maximum permissible limit of Arsenic is considered at 0.01mg/l. An amount of `1805.04 Crores for short term (by providing community water purification plant including seven years O&M) and `6319.56 Crores for long term solution (taking up water supply projects) i.e., nearly `8124 Crores is required.

Total Cost : `8124 Crores (Arsenic limit at 0.01mg/l)

(ii) D/o Health Research has informed that Indian Council of Medical Research (ICMR) has constituted an Expert Group under the Chairmanship of Dr. D.N. Guhamajumdar, and that this Group is scheduled to meet on 01.06.2015 in ICMR to review the currently available treatments for Arsenic related diseases and to suggest areas for future focused research.

Therefore, an action plan and the likely financial implications in implementation of the said plan can be formulated and quantified only after the Group meets and submits its report.

Comments of the Committee

(Please see Para No. 1.46 & 1.47 of Chapter I)

CHAPTER V

Recommendations/Observations in respect of which final reply of Government is still awaited

Observation/Recommendation (Sl. No.2)

The Committee are at a loss to understand as to why there is no comprehensive data about affected districts/States and the magnitude of population exposed to Arsenic, even thirty-eight years after first Arsenic contamination incident came to notice in Chandigarh. The information furnished by the Ministry of Water Resources, River Development and Ganga Rejuvenation (M/o WR, RD & GR) shows that 86 Districts in 10 States have Arsenic contamination exceeding the permissible limit. The Department of Agricultural Research and Education (DARE) has, however, listed out only 71 Districts in 09 States having Ground Water Arsenic contamination. The Department of Science and Technology (DST) has come out with yet another list of affected districts and States. Collation of information furnished by different Ministries shows that there are 96 districts in 12 States affected by ground water Arsenic. According to the Council of Scientific and Industrial Research (CSIR), 70.4 million people have been identified with ground water Arsenic contamination in 35 Districts in six States. The figure of affected population will be much higher if data about affected people in all the 96 districts are collected. All these conflicting data show that there had been no attempt to collect reliable data by any central agency. The Committee deplore such casual attitude and hardly need to emphasize that dependable, accurate and regular update of data are essential for providing perspectives with regard to public health, agriculture and other purposes. The Committee, therefore, desire that immediate steps should be taken to draw up a central data base about Arsenic affected districts/States not only for drinking water segment but also for irrigation and the data of human population, animals and crops exposed to Arsenic.

Reply of the Government

- (i) M/o Consumer Affairs have informed that amendment to IS 10500:2012 has been finalized and Extra-Ordinary Gazette Notification has been sent for issuance. Thus, the process of revision of limit of Arsenic from 0.05 mg/l to 0.01 mg/l has been completed. With this modification, the existing data will undergo a major change and may include more States/ Districts/ Population affected by Arsenic.
- (ii) Task Force constituted by M/o Health & Family Welfare will work out modalities of doing a robust mapping of areas affected by high Arsenic content in ground water.
- (iii) IMG has asked Central Ground Water Board (CGWB) to compile data on habitations affected by Arsenic contamination of ground water for **(a)** 0.01 to 0.05 ppm and **(b)** more than 0.05 ppm. Chairman, IMG advised that all the State Governments may provide data to CGWB at the earliest. Arsenic concentration data should also contain the latitude and longitude details of the wells from where the samples were collected so that GIS based maps can be prepared.
- (iv) The 'Inter-Ministerial Group' on 'Arsenic Mitigation' constituted vide Order dated 22nd December, 2014 has been made a Standing Group, which will **(a)** over-see the implementation of Action Plan of the various Ministries/Departments; **(b)** reconcile data; **(c)** guide the entire program and; **(d)** coordinate the efforts of all Stakeholders.

Comments of the Committee

(Please see Para No. 1.8 of Chapter I)

Observation/Recommendation (SI. No.15)

Arsenic affected people are economically backward and loose their earthly possession in the process of Arsenic treatment. The Committee feel that it is the duty of the State to provide them relief. The Committee, therefore, recommend that Arsenic affected people should be provided treatment and medicines free-of-cost. They should also be provided with health insurance and life insurance with the cost of premium borne by the Government.

Reply of the Government

Health is a State subject. It is expected that State Governments through their respective health system would provide medicines for all diseases, including Arsenic related diseases, free of cost or at subsidized rates. This would especially hold for Below Poverty Line (BPL) and poor patients.

As far as life insurance is concerned, this subject does not fall in the realm of M/o Health & Family Welfare.

Regarding health insurance for Arsenic affected people, the affected State Governments could explore this option. Ministry of Finance may also have views on the subject. Normally health insurance, which is based on the principle of risk pooling, would be more successful where numbers are very large. Moreover, for the person who is being insured, health insurance would be appealing for all illnesses rather than only for Arsenic related diseases. As already mentioned, symptoms for Arsenic related diseases may be visible after extended periods of time. It may be difficult to persuade the population in the affected area to pay a insurance premium.

The Ministry in the updated replies stated as under :-

MoWR, RD & GR has written D.O letter & Reminders to Ministry of Finance to obtain the comments/views, which are awaited. Since the matter is serious and pecuniary in nature, we may wait for the views of M/o Finance.

Observation/Recommendation (SI. No.22)

The Committee find that the problem of ground water Arsenic contamination, in spite of being very grave, has not received deserved attention due to lack of its focus in the National Water Policy-2012. The Arsenic contamination in ground water was first reported almost four decades ago and presently spread over 96 districts in 12 States. The population identified with Arsenic contamination is as much as 70.4 million and 2 to 3 lakhs of confirmed cases of Arsenic illness. In view of the seriousness of the problem, the Committee urge that there should be a specific focus in the National Water Policy to address this humongous problem, by appropriate addendum to the National Water Policy-2012.

Reply of the Government

Concern of the Hon'ble Committee has been noted and the matter is under consideration of the Ministry.

Comments of the Committee

(Please see Para No. 1.41 of Chapter I)

New Delhi;
09 August, 2016
18 Shravana, 1938(Saka)

DR. MURLI MANOHAR JOSHI,
Chairperson,
Committee on Estimates.

MINUTES OF TENTH SITTING OF THE COMMITTEE ON ESTIMATES (2015-16)

The Committee sat on Friday, the 8th January, 2016 from 1200 hrs. to 1300 hrs. in Room No. '53', Parliament House, New Delhi.

PRESENT

Dr. Murli Manohar Joshi – Chairperson

Members

2. Shri Anil Shirole
3. Shri Ashwini Kumar Choubey
4. Col. Sonaram Choudhary
5. Shri Sanjay Dhotre
6. Shri P.C.Gaddigoudar
7. Shri Sudheer Gupta
8. Dr. Sanjay Jaiswal
9. Shri P. Kumar
10. Shri J.C. Divakar Reddy

SECRETARIAT

1. Shri Devender Singh - Additional Secretary
2. Shri Vipin Kumar - Director
3. Shri Srinivasulu Gunda - Additional Director

2. At the outset, the Chairperson welcomed the Members to the Sitting of the Committee.

3. ***

4. ***

5. Thereafter, the Committee took up for consideration Memorandum No. 7 regarding Action Taken by the Government on the Observations/Recommendations contained in the 1st Report of the Committee on Estimates (2013-14) (Fifteenth Lok Sabha) on the subject 'Occurrence of High Arsenic Content in Groundwater'. The Committee expressed their dissatisfaction with the action taken by the Government and desired that the comments of the Ministry of Finance, Cabinet Secretariat and other concerned Ministries may be sought at the first instance. Thereafter, they may be called for evidence before the Committee.

6.

The Committee then adjourned with vote of thanks to the Chair.

MINUTES OF THE EIGHTH SITTING OF THE COMMITTEE ON ESTIMATES (2016-17)

The Committee sat on Monday, the 8th August, 2016 from 1500 hrs to 1545 hrs. in Main Committee Room, Parliament House Annexe, New Delhi.

PRESENT

Dr. Murli Manohar Joshi – Chairperson

MEMBERS

2. Shri Sultan Ahmed
3. Shri A. Arunmozhithevan
4. Shri George Baker
5. Shri Dushyant Chautala
6. Shri Ashok Shankarrao Chavan
7. Shri Ram Tahal Choudhary
8. Shri Col. Sonaram Choudhary
9. Shri Sanjay Dhotre
10. Shri P. Kumar
11. Shri K. H. Muniyappa
12. Shri Ravindra Kumar Pandey
13. Shri Raosahed Danve Patil
14. Shri Md. Salim
15. Shri Jugal Kishore Sharma
16. Shri Jai Prakash Narayan Yadav

SECRETARIAT

1. Shri Devender Singh – Additional Secretary
2. Shri Vipin Kumar – Director
3. Shri R. S. Negi – Under Secretary

2. At the outset, the Chairperson welcomed the members to the sitting of the Committee.

3. The Committee then took up for consideration Memorandum No. 4 regarding draft Report on the Action Taken by the Government on the Observations/Recommendations contained in the 1st Report of the Committee on Estimates (2014-15) on the subject 'Occurrence of High Arsenic Content in Groundwater' pertaining to the Ministry of Drinking Water and Sanitation.

4. The Committee after consideration adopted the above Report with minor modifications and authorized the Chairperson to finalize the Report and present the same to Lok Sabha.

The Committee then adjourned with vote of thanks to the Chair.

ANALYSIS OF THE ACTION TAKEN BY GOVERNMENT ON THE RECOMMENDATIONS CONTAINED IN THE FIRST REPORT OF THE COMMITTEE ON ESTIMATES (SIXTEENTH LOK SABHA)

(i)	Total number of recommendations/observations	28
(ii)	Recommendations/Observations which have been accepted by the Government (Sl. Nos. 1,3, 4, 5, 7, 9, 10,11, 12, 16, 17,18, 19, 20, 21, 24, 25, 26, 27, 28)	20
	Percentage of total recommendations	71%
(iii)	Recommendation/Observation which the Committee do not desire to pursue in view of the Government's reply Percentage of total recommendations	NIL
	Percentage of total recommendations	NIL
(iv)	Recommendations/Observations in respect of which Government's replies have not been accepted by the Committee (Sl. Nos. 6,8,13,14 and 23)	05
	Percentage of total recommendations	18%
(v)	Recommendation/Observation in respect of which final replies of Government is still awaited. (Sl. Nos. 2,15 and 22)	03
	Percentage of total recommendations	11%