

# Template for Environmental and Social Safeguards Management NAIP

**Project title:** Arsenic in food-chain : Cause, effect and mitigation

## 1. Basic information

### A. Project data

**Project Statistics:**

**Total Cost:** Rs.673. 29005 lakh

**Duration:** Four years and nine months

**Location:** Nadia , Coochbehar and Kolkata

- **Consortium Leader :** Bidhan Chandra Krishi Viswavidyalaya,Mohanpur,Nadia
- **Cooperating Centers:** UBKV, Pundibari, Coochbehar  
WBUAFS, Belgachia, Kolkata  
CIFRI (ICAR), Barrackpore, Kolkata  
IVRI (ER, ICAR), Belgachia , Kolkata  
DNGMRE, Kolkata
  
- **Consortium Leader:** Dr. Supradip Sarkar,
- **Consortium Partners:**Dr. Dibyendu Mukhopadhyay,  
Dr. Samar Sarkar,  
Dr. Srikanta Samanta,  
Dr. Asit K. Bera,  
Dr. D. N. Guha Mazumdar

### Project Objective:

1. To study genetics of arsenic tolerance, physiology and transport mechanism in rice
2. To identify microbes which could be used for soil amelioration
3. To characterize the path of arsenic in food-chain long with mitigation options.
4. To determine the adverse effects of arsenic on human health through the food-chain

### Brief project Description:

Elevated arsenic levels in contaminated ground water-irrigated crops in West Bengal have been documented. The soil of the affected zone of West Bengal has also been shown to act as a major sink of arsenic inflow to agro-ecosystems, thereby reducing the availability of the toxicant to the cropped species. However, the cellular metabolism of arsenic in plants and microbes; the interaction of root exudates with arsenic, along with its effect on soil biota in the crop rhizosphere are yet to be elucidated. Health effect of humans (and animals) due to arsenic exposure through food-chain are also yet to be ascertained.

Since there have been recent reports of arsenic contamination of groundwater in several other parts of India and elsewhere, the results of the present research are expected to be of help to a large number of human population

## B. Environmental category

### 2. Major issues of the subproject

#### A. Social:

1. Qualitative and quantitative improvement in crop animal produce through appropriate arsenic mitigation options may enhance the status of net return against unit investment of rupee.
2. Reduction in possibilities of disorders in human health due to arsenic pollution

#### B. Environmental:

1. Appropriate water management practices will dilute the arsenic concentration of aquifer water and that water can be used relatively safely for irrigating the crops.

### 3. Safeguard Policies Triggered (World Bank Policies):

Safeguard Policies Triggered (World Bank Policies)		
	Yes	No
Environmental Assessment (OP/BP 4.01)	[ ]	[X]
Natural Habitats (OP/BP 4.04)	[ ]	[X]
Pest Management (OP 4.09)	[ ]	[X]
Cultural Property (draft OP 4.11-OPN 11.03 -)	[ ]	[X]
Involuntary Resettlement (OP/BP 4.12)	[ ]	[X]
Indigenous Peoples (OD 4.20)	[ ]	[X]
Forests (OP/BP 4.36)	[ ]	[X]
Safety of Dams (OP/BP 4.37)	[ ]	[X]
Projects in Disputed Areas (OP/BP 7.60)	[ ]	[X]
Projects on International Waterways (OP/BP 7.50)	[ ]	[X]

4. Risk related Issues (not covered under 3 above but perceived to be important in the sub project): None

5. Impact Assessment (Enclosure –I and II)

#### A. Environmental safeguard: Activities, Issues, Impact and Mitigation Measures

Activities	Issues	Anticipated level of impacts		Mitigation Measures
		Positive	Negative	
To study genetics of arsenic tolerance, Physiology and transport mechanism in rice	Minimise arsenic status in rice grain	Moderate (Scale 3)		
To identify microbes which could be used for soil amelioration	Convert arsenic from more toxic to less toxic form	Moderate (Scale 3)		
To characterize the path of arsenic in	Reduce arsenic pollution in	Moderate (Scale 3)		

food-chain along with mitigation options.	irrigation water-soil-plant-animal system			
To determine the adverse effects of arsenic on human health through the food –chain	Human health through food chain	Moderate (Scale 3)		

**B. Social safeguard: Activities, Issues, Impact and Mitigation Measures.**

Activities	Issues	Anticipated level of impacts		Mitigation Measures
		Positive	Negative	
All the activities listed above	Improvement of human health through understanding of path of arsenic in the food chain and controlling it	Impact will be positive only		

**6. Potential indirect and/or long-term impacts due to anticipated future activities in the project areas (assessment of anticipated conflict/complementary with the current as well as those proposed for the next five years):**

Anticipated future work will be related to using the knowledge gathered through this project for controlling transmission of arsenic through the food chain. The complementary works on providing safe arsenic free drinking water, water management is already going on and medical studies on effect on health are already going on and will continue.

**7. Identify the key stakeholders and describe mechanism for consultation/ disclosure so far done (widely sharing the documents on the subproject, other mechanisms to get a buy-in with the stakeholders including the farmers):**

While developing the projects a wide consultation with agricultural officers (at Block, district and state levels), Panchayet Personnel, Veterinary Doctors, Health officers, farmers and NGOs were made. As the project involves the participation of farmers and rural folks as a part of the study consultation and disclosure will be a continuous process.

**Consortium PI**

**National Coordinator**

**National Director**

