In an aftermath of a Disaster, it is essential to maintain adequate need based food supply chain for the affected community. Cleanliness and hygiene of the food supplies are two very critical factors to ensure that there are no disease outbreaks.

FICCI, as an apex industry association in the country has chosen Disaster Management as a pronounced focus area not only for the attention of the industrial sector but also for Statutory Agencies, NGOs, District & State Authorities.

In view of this, we are jointly organizing a National conference on "Food Security, Safety and Processed Food during Disaster Situations" with the National Disaster Management Authority (NDMA), an apex authority on Disaster Management in India and Ministry of Food Processing Industries (MoFPI), Government of India. It aims to look into issues of Food Safety in Disaster
Situations. It focuses to understand gaps in the regulatory framework, quality standards and existing facilities of the state and private responders providing Food supplies during disasters.

NDMA is also working with national experts for the preparation of National Guidelines on "Minimum Standards for Water, Food, Hygiene and Sanitation" during disasters. Inputs received through this conference will be shared with the government to further improvise these guidelines.

Under this context, we would like the members of the Disaster Management and Food and Nutrition Security Community to:

- Highlight key issues and challenges in the present food supply chain during Disaster Situations
- Identify gaps in the regulatory framework, quality standards and existing facilities of the state and private responders providing Food supplies during disasters
- Components that the proposed NDMA Guidelines on "Minimum Standards for Water, Food, Hygiene & Sanitation" need to consider to ensure food safety during disasters.
- References of any individuals or organizations who can participate in the consultations for preparations of these standards.

The discussion will help in preparing a satisfactory contingency action plan suitable for meeting the needs of food of the people affected by the disasters.

Responses were received, with thanks, from

1. B. P. Gangadhara swamy, CCF-India, Malavalli, Karnataka
2. Ramesh Bhat, Independent Consultant, Hyderabad
3. Bhavani, M. S. Swaminathan Research Foundation (MSSRF), Chennai
4. Wadgave Hanmanta Vishwanath, Primary Health Centre, Solapur, Maharashtra
5. Pravin Bhardwaj, GOI- UNDP Disaster Risk Reduction Programme, New Delhi
6. Navpreet Singh, Nidan Samaj Sevi Samaiti, Gwalior
7. Venkatesh. P, Department of Community Medicine, Sri Siddhartha Medical College, Bangalore
8. Raj Ganguly, FAO India, New Delhi
9. Bibhu Prasad Mohanty, Consultant-Mission Shakti (Government of Orissa initiative for Women Empowerment), Khurda, Orissa
10. J P Dadhich, Breastfeeding Promotion Network of India, Delhi
11. Prasad Sankpal, Convergence of Agriculture Interventions in Maharashtra (CAIM), Collector Office, Wardha
12. Yogendra Nanoskar, Civil Defence Corps Mumbai, Mumbai
13. Abha Mishra, United Nations Development Programme, New Delhi
14. Ashok P. Ghule, District Disaster Management Officer (DDMO), Collector Office Thane, Maharashtra
15. K S Karnic, Independent Consultant, Bangalore
16. Piyooash Rautela, Disaster Mitigation and Management Centre, Dehradun
17. Harichandan Mishra, Independent Consultant, Bhubaneswar
18. L. P. Semwal, Shri Jagdamba Samiti, Rishikesh
19. Kedareswar Choudhury, Darabar Sahitya Sansad, Orissa*
20. S. S. Thorat, Department of Food Science & Technology, MPKV, Maharashtra*
21. D. Raghunatha Rao, National Institute of Nutrition (NI), Hyderabad*
22. Gopi Ghosh, FAO India, New Delhi

*Offline Contribution
Summary of Responses

Food Safety during disasters is an important issue. Cleanliness and hygiene of food supplied are two very critical factors to ensure that there are no disease outbreaks. The discussion on “Food Safety in Disaster Situations: Key Challenges and Recommendations”, enabled members to reflect upon the existing practices, spotlighting on food safety and security during disasters.

Contributors felt that the foremost requirement for ensuring Food Safety in Disaster Situations is to create a clear understanding and to ensure appropriate coordination amongst Government, donors, civil society organizations and private sector. Towards this, members highlighted constraints such as limited knowledge and information on food safety, inadequate skills and capacities of the actors and disparity in available infrastructure across various States etc.

Respondents highlighted key issues and challenges in the present food supply chain during Disaster Situations and also provided recommendations to tackle the challenges. A few important issues are:

- **Limited role of state governments;** in food storage. Central Government is responsible to provide food the States, therefore during an emergency, state governments have to wait for central government for supplying food. This takes lot of time. Members suggested having State level food storage systems along with current system for immediate needs.

- **Rise in food prices during emergencies;** food materials like wheat, rice, pulses, oils become unaffordable during catastrophes.

- **Absence of Disaster management plan;** that provides information for local level food availability during times of disaster and engagement of the local community and capacity building of the Panchayats

- **Transportation and storage of food materials;** many times there is shortage of trucks or the food gets spoilt during transportation due to humid weather and rains. Also due to shortage of Polythene sheets the food is left uncovered in open storage areas or godowns.

- **Unplanned and Unequal distribution of food material/packets;** in absence of a proper distribution mechanisms or distribution charts, air dropped or manually distributed food packets do not reach all the victims. This results in stampedes, rioting and injuries during the distribution process.

- **Socio Cultural differences between the various groups of the community;** there is exclusion of Below Poverty Line families from the community kitchens and other food distribution outlets.

- **Failure of Public Distribution System to deliver food on time**

Members identified gaps in the regulatory framework, quality standards and existing facilities of the state and private responders providing Food supplies during disasters. They are:
- **Regulatory Framework**: Due emphasis on disaster preparedness in policy and practice; Synergetic effort by agencies across government, voluntary organizations, educational institutions and community based institutions and Proactive approach in ensuring minimum standards either by Centre and state Governments

- **Quality standards**: Varied and poor quality of food provided by different external agencies, leading to gastrointestinal tract problems amongst affected communities; Inadequate attention towards infants and young children, the most vulnerable age group; Outbreak of food borne diseases in the community due to consuming contaminated food

- **Existing facilities of the state and private responders providing food supplies**: Proper storage structures; Safe storage of grain in accessible structures; Improper storage of locally grown food in the grain/food banks; Waste Management of Food

Discussing the NDMA Guidelines on "Minimum Standards for Water, Food, Hygiene & Sanitation", respondents recommended the guidelines to:

- Clearly indicate the procedure to be followed for procurement, storage, transportation, loading and unloading and distribution.
- Fix a standard of quality based on the existing food safety guidelines prevalent in the country.
- Outline Standard Operating Procedures (SOPs) in food and water handling.
- Lay importance to Creating awareness about the importance of food and water safety among the general public and including information on usage of best practices and simple tools & techniques during disaster situations

Participants suggested introducing a Food Hygiene and Sanitation Law, which may include food hygiene, food additives, packaged and containers of food, the enactment of regulations and hygiene standards on food, the administration of food hygiene, the supervision of food hygiene, penalties, and miscellaneous clauses.

Apart from the above, in order to ensure food safety in disaster situations, members recommended the following:

- Sharing of information on storage of food commodities in the stock by the Central government, thereby helping each state government to make contingency plans
- Having coordination between Government and the Food Corporation of India to ensure safe storage and food security at community and family level
- Conducting Minimum standard test for food before supply during disasters to ensure hygiene
- Ensuring availability of food materials at block or Taluk level by the government
- Providing food as per the needs of the different age groups
- Having restriction on unsolicited food source
- Integrating NREGS, National Rural Livelihood Mission (NRLM) and other agriculture development schemes etc along with collaborative efforts with Ministry of Food processing industries, Save the Grain Campaign, etc
- Ensuring availability of safe cooked or dry food, medicines and water for both human and domestic animals during the time of disaster under community/ panchayat/block
- Planting mango, jackfruit, cashew, tamarind, Jamun, guava, neem and large plants on a large scale and promoting processed food and other products to ensure livelihood and food security in the climatically disturbed areas.
- Establishing Gene-seed-grain banks in every village.
- Having long-term infrastructure and system arrangements to ensure disaster management at both community and government level prior to disaster
Finally respondents strongly urged involving the community in preserving food material that can be stored and used for longer duration in times of disaster. In Bihar the community preserved food items prior to the floods in order to avoid shortage during disaster. Further, members highlighted the importance of generating awareness on food security issues and suggested building communities understanding on various techniques and process of Food availability and storage. Members felt that media can play an important role in reaching out this information to poorest of poor. Respondents felt crucial to engage groups like the SHGs/ youth clubs to receive and cook or receive and distribute the food among the affected community be it in the relief camps or community kitchens. In Kolahpur, Maharashtra, during the floods, a local NGO along with the community took the lead in ensuring provision of hygienic food to the affected community.

Members concluded by mentioning that Food safety during disaster requires multipronged approaches supported with science and technology (both modern and traditional). Systemic preparedness and community level approaches will not only ensure food safety but also manage to address larger livelihood security, human rights and gender equity related issues too. Finally, members felt glad that such a critical issue could be discussed through this forum and hoped that development workers and professionals make note of people's capacities and work on fostering better understandings in different initiatives.

**Comparative Experiences**

**Bihar**

**Storing of Food Items Prior to the Floods** *(from Pravin Bhardwaj, GOI- UNDP Disaster Risk Reduction Programme, Delhi)*

In Bihar, people store food items like flattened rice (churva), murmure, makhana and roasted gram flour before the floods. These food items being dry are stored and used for many months in the areas vulnerable to floods. They prepare ladoos made of wheat, rice flour, churva and gram flour, high in protein, which forms a useful food supplement. This has helped the community in various situations to sustain till the aid from the government comes.

**Maharashtra**

**Food Supply in Relief Camps, Kolhapur** *(from Prasad Sankpal, Convergence of Agriculture Interventions in Maharashtra (CAIM), Collector Office, Wardha)*

During the 2006 floods in Kolahpur, there was special emphasis on health and hygiene. The community arranged a kitchen under the supervision of district administration. Proper menus was decided for each day. The food supplied was regularly monitored including special arrangement for providing milk to the children. All food related donations were inspected by the district administrators thus ensuring better management and distribution of food.

**Related Resources**

**Recommended Documentation**

**Food import and export inspection and certification systems - Combined texts** *(from Ramesh Bhat, Independent Consultant, Hyderabad)*

An important booklet published by WHO and FAO that includes standard format for information exchange in food safety situations.

**Recommended Organizations and Programmes**

**Food Corporation of India, New Delhi** *(from B. P. Gangadhara Swamy, CCF-India, Malavalli, Karnataka)*
Rajendra Bhawan, Ground floor, DDA Complex, Rajendra Place, New Delhi; Tel: 91-11-25768007
mdfci.fci@nic.in; http://fciweb.nic.in/PDS/Note%20on%20PDS%20&%20OWS.pdf
Making efforts at community and family level in villages to ensure the safe storage and to ensure food safety by introducing different types of storage system

**Codex Alimentarius Commission, Rome** *(from Ramesh Bhat, Independent Consultant, Hyderabad)*
Viale delle Terme di Caracalla Rome 00153, Italy; Tel: +39-06-5705; Fax: +39-06-4593
Codex@fao.org; http://www.codexalimentarius.net/gsfaonline/index.html?lang=en
Aims to develop food standards and guidelines for ensuring food safety, also protecting health of the consumers and ensuring fair trade practices in the food trade

From **Bibhu Prasad Mohanty**, Consultant-Mission Shakti, Khurda, Orissa

**National Rural Livelihood Mission (NRLM), New Delhi**
Ministry of Rural Development, Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi 110001; Tel: 91-11-2338-2313; Fax: 91-11-2688-8254
sgsy1-mord@nic.in; www.rural.nic.in
A national flagship programme aiming at poverty reduction; Can be collaborated with, to ensure Food Security and Safety during disasters.

**National Rural Employment Guarantee Act (NREGA), New Delhi**
Ministry of Rural Development, Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi 110001; Tel: 91-11-2338-5027; Fax: 91-11-2649-3228
psjspa.rd@nic.in; www.rural.nic.in
National Employment Guarantee Scheme; can be collaborated with, to ensure Food Security and Safety during disasters.

**Ministry of Food Processing Industries, New Delhi**
Panchsheel Bhavan, August Kranti Marg, New Delhi 110049; Tel: 91-11-2649-2475; Fax: 91-11-2649-3228
mofpi@hub.nic.in; http://mofpi.nic.in/
Actively contributing to the agricultural development schemes and also ensuring food security by various methods

**Save the Grain Campaign, New Delhi**
Department of Food and Public Distribution, Krishi Bhawan, New Delhi 110001;
http://fcamin.nic.in/dfpd_html/storage_research_b.htm
Is an initiative that helps farmers to adopt measures at farm level to minimise the foodgrain losses, also ensuring food security

**Food and Drug Toxicology Research Centre, Hyderabad** *(from D.Raghunatha Rao, National Institute of Nutrition (NIN), Hyderabad)*
National Institute of Nutrition, Jamai-Osmania, Hyderabad 500007;
http://www.icmr.nic.in/pinstitute/fdtrc.htm;
Contributing to ensure food safety and security in the country by implementing various programmes
From L. P. Semwal, Shri Jagdamba Samiti, Rishikesh

THDC India Ltd,
http://thdc.gov.in/English/Scripts/Lookingahead_Futureplan.aspx

It is considering to process coarse grains for ready to eat food to help contribute to food safety in the disasters

Central Food Technological Research Institute (CFTRI), Mysore
Mysore 570020; Tel: +91-821-2514-534; Fax: +91-821-2515-453; ttbd@cftri.res.in;
http://www.cftri.com/

Working along with THDC India Ltd to process coarse grains that would be useful in disasters as ready to eat food

Related Consolidated Replies

Discussion: Revising Food Security Component of the Sphere Handbook from Devrig Velly, Senior Food Security and Livelihoods Advisor, Action Against Hunger / ACF-International Network, New York. Food and Nutrition Security Community and Disaster Management Community
Issued 15 September 2009. Available at http://www.solutionexchange-un.net.in/food/cr/cr-se-food-drm-28070901.pdf (PDF,144 KB)

Provides inputs on the existing standards, indicators and additional components for consideration for ensuring food security of the affected in the sphere handbook

FOR COMMENTS: Revising the Food Security, Nutrition and Food Aid Components of Sphere Handbook from Susan Thurstans (Save the Children UK), Paul Turnbull (WFP), Walter Middleton (World Vision), Devrig Velly (ACF).
Available at http://www.solutionexchange-un.net.in/food/cr/cr-se-food-drm-04110901.pdf (Size:75 KB)

Comments upon the food security, nutrition and food aid components of the Sphere Handbook

Responses in Full

B. P. Gangadhara swamy, CCF-India, Malavalli, Karnataka

Here are my inputs for the discussion:

- As per my knowledge in the current system, in India, the central government is totally responsible for food storage, regularly it distributes food materials to PDS and other system based on the each state requirement, hence the role state government is very limited. In most of the time, when a disaster happens, state government has to wait for central government supply, which takes lot of time. Hence, each state has to have its own food storage system, along with current system for immediate needs.

- In the current, we are mainly focusing on food crops wheat, rice etc but when a disaster occurs, the prices of other food materials like pulses, oils reaches sky limits where people can't afford it. Hence, government should try to ensure minimum food materials in its supply chain system.

- At regular intervals, the central government should share the information of storage of food commodities in its stock; hence, each state government can make contingency plans, to
avoid any wastage or spoil of food commodities. It also helps to control the food prices to limited extent.

- Right now FCI is making lot of efforts at community and family level in villages to ensure the safe storage and to ensure food security by introducing different types of storage system, but state government agencies support is not to the expected level. Each state government should feel the need of this program, should join their hand whole heartedly, instead blaming each other in the crisis time.

- Coming to food hygiene during disaster, we have to ensure food source, it has to go through minimum standard test, before it is supplied to people.

- Finally, at block or Taluk level, government has to have stock of food materials available both at private dealers and government on timely basis, it not only helps during any disaster, but also helps to know supply and demand of that particular area.

Ramesh Bhat, Independent Consultant, Hyderabad

The query on Food safety in disaster situation by Sri Rubaab Sood raises an important issue pertaining to food security and food safety.

1. A uniform terminology is essential to discuss the Food safety in disaster situations. For this purpose, the words “Food safety emergency” could be used since over 180 member countries of the Codex Alimentarius Commission of the FAO/WHO have accepted this terminology. According to Codex Food safety emergency is defined as “a situation whether accidental or intentional, that is identified, by a competent authority as constituting a serious and as yet uncontrolled foodborne risk to public health that requires urgent action.” The Principles and guidelines for the exchange of information in food safety emergency situations (CAL/GL 19-1995) have been published. It includes standard format for information exchange in food safety situations. (Reference: Food Import and export inspection and certification systems, Fourth edition, WHO and FAO, Rome 2009 pp72-79, available for free download from Codex website)

2. The key issues and challenges in the food supply chain during Disaster Situations is the likelihood of foodborne disease outbreak in the community. Several disease outbreaks in humans due to contaminated food had been described in the past in India. These include the aflatoxic hepatitis in India in 1974, and in Kenya during 1981, 2004 and 2005 due to consumption of mouldy maize, Deoxynivalenol mycotoxics in India and China during 1987 due to consumption of rain damaged, mould affected wheat, Fumonisin mycotoxics due to mouldy sorghum and Veno Occlusive disease during mid 1970’s in Afghanistan and India due to weed seed contamination in staple food grains.

3. It is very common that substandard food is supplied during disaster situations. A good example is the distribution of Star link variety of maize, (a variety of Genetically modified food not approved for human consumption in the place of its production, but approved only as animal feed) in parts of India during 2002 and 2003 by certain donor agencies.

4. The Guidelines on “Minimum Standards for Water, Food, Hygiene & Sanitation” in food safety emergency should be in no way different from those for food supply under normal circumstances.

5. As per the Codex guidelines “When a food safety emergency arises, in order to minimize potential adverse public health effects, it is essential to communicate the nature and extent of the food safety problem to all relevant parties as expeditiously as possible”.

6. As per the Codex, the important issues to be considered are the i) nature of the food safety emergency such as the cause (whether biological/chemical /radionuclide contamination ii) identification food concerned such as description/quantity iii) affected or potentially affected population group(s), iv) information on action taken such as measures taken to identify and prevent the sale and distribution of food concerned v) details of the designated official contact point and of the relevant competent authority.
Bhavani, M. S. Swaminathan Research Foundation (MSSRF), Chennai
It is important to have a disaster management plan in place, which would provide for local level food availability during times of disaster like a cyclone or the 2006 tsunami. Isolated hamlets in the Andaman and Nicobar Islands for instance, were not reached for about a week after the tsunami struck in 2006. Engagement of the local community and capacity building of the Panchayats to respond in disaster situations, take stock immediately after a disaster and set helplines will help effective outreach and should be built into the plan.

Community foodgrain banks in tribal pockets of Orissa have been observed to provide some respite after cyclone/floods, for villages that are cut-off. This brings one to the importance of proper storage structures and safe storage of grain in accessible structures.

From a food security point of view, there should also be emphasis and encouragement to storage of locally grown food in the grain/food banks. Food Safety is especially crucial with regard to packaged food that maybe distributed/air dropped as immediate relief after a disaster. Safe Water is another major issue to address as part of the disaster management package. Disaster management should carefully disentangle from the wave of charity that generally pours in the aftermath of natural calamities and have clear guidelines in place on what kind of food is acceptable for distribution.

Wadgave Hanmanta Vishwanath, Primary Health Centre, Solapur (Maharashtra)
Food safety is very important during disasters.

During Latur Earthquake the major problems about food safety observed were:
- Food provided by various peoples was of varied quality
- Cooked food became waste after 12 hours and waste management became a big problem
- There was increase in the gastrointestinal tract problems after post earthquake area due to poor food supply
- Food supplied to all age group was same to child, pregnant mother & old aged men/women but it should different for various age group as per need.

So my suggestions are:
- Unsolicited food source should be denied.
- Cooked food should not be accepted and not to given for any affected victim.
- Food supply should be from authorized agency approved by Government
- Food should be well packed and should as per need i.e. iso-dense high calories to children etc.

Pravin Bhardwaj, GOI - UNDP Disaster Risk Reduction Programme, New Delhi
Thanks for sharing the information on food safety. Here I will try to reflect the example of few villages from Bihar where I worked and in flood months the ways that was adapted for taking care of the food requirement. In Bihar, there is definite duration of the flood and people know very well that for how many days the water is going to stagnate in normal flood condition. People in the affected area traditionally use to stuff important things before the flood. The major materials were flattened rice (churva), murmure (it is known as muhri in that area), makhana and roasted gram flour (sattu). All these three are dried stuff which may remain with the family for many months and can be had with ghee, sugar or other things so that people don't go
hungry. The other practices were to keep dried vegetable for the next season as vegetables became scare during floods. Ladoos made out of wheat, rice flour, churva and gram flour which was high in protien and can act as food supplement for some time.

All the family which adopts these methods are more comfortable during the flood in those areas and they sustain for few days before the other supplies come from the government and other sources.

What can be done is that we can encourage the family to keep these kind of food materails ready with them so that initial problem of the food supply may be taken care off. These practices may come handy in few situations unit and unless the disaster is of a very high severity.

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**Navpreet Singh, Nidan Samaj Sevi Samaiti, Gwalior**

There may be problem in cooking unbaked food. How is it possible to provide unbaked food in case of floods? Earthquake is not the only disaster.

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**Venkatesh. P, Department of Community Medicine, Sri Siddhartha Medical College, Bangalore**

It is good to hear and know such practices shared on this platform wherein people have their indigenous methods to tide over food crisis though for short time initially, in disaster situation. That's what people's participation level and development workers and professional have to make note of people's capacities and work on these lines to foster better understandings in different initiatives.

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**Raj Ganguly, FAO India, New Delhi**

It is good to notice that we are focusing this often neglected yet very crucial issue through Solution Exchange. For a large and diverse country like ours where the awareness to food safety issue in general is very low, tackling this in disaster situations becomes still very challenging.

The foremost requirement is to create a clearer understanding among the different actors including Government, donors, civil society organizations and private sector, on the criticality of food and water safety dimension in disaster situations. It demands a closer working and coordination between various actors. The major challenge in this direction is limited knowledge and information on food safety, inadequate skills and capacities of the actors, disparity in available infrastructure across various States etc.

Developing standard operating procedures (SOPs) in food and water handling and building capacity of the actors in this direction is important. Apart from this it will be also prudent to create awareness about the importance of food and water safety among the general public, which could include information about the best practices and use of simple tools & techniques that can be used during disaster situations by themselves.

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**Bibhu Prasad Mohanty, Consultant-Mission Shakti (Government of Orissa initiative for Women Empowerment), Khurda, Orissa**

Disasters are usually of two types. One is natural and other one is manmade / industrial. Here I am providing my response on Natural Disasters. In Orissa we face following types of disasters.
Major and regular natural disasters usually felt across all strata of life in both rural and urban areas in Orissa for more than 250 years

- Flood
- Cyclone
- Drought
- Summer diseases of people and livestock, poultry, forest animals

Regular Disasters usually affect agriculture sector for centuries in Orissa and coastal India

- Flood
- Cyclone
- Drought
- Flash Flood
- Insect, Pest and diseases incidences in agriculture and horticulture fields
- Infectious Diseases of Poultry Birds
- Infectious Diseases of Livestock
- Forest fire (natural and man made)

In all those conditions, human sufferings are mostly common. Disasters affect mostly availability of food and entire process of livelihood. It is a situation where the efficiency and appropriateness of different livelihood practices and truth behind traditional beliefs/practices related to production, storage and processing of food, resource utilisation & management, coping mechanism etc are unfolded and relevance of those are revealed to mass. I am trying to write from my own experience across the years.

Here I would like to stress upon the role and responsibility of Government and Community in fighting natural disaster which in my research works found to be ranked by common men and women as the most important and dangerous to food and livelihood sector. Regular natural disaster usually affects the production, storage, processing and marketing of produced materials, in particular generated from agriculture, horticulture and animal husbandry. During disaster management of health, sanitation, food and livelihood security and saving large scale physical and natural resources become very much critical and important for both Government and people. All these are directly responsible and basic requirements for the livelihood management of people. To address these problems I suggest following measures should be taken seriously by both community and Govt.

- Establishment of Gene-seed-grain banks in every village. That will ensure seed and right genetic materials to continue agriculture activity at household level even after the disaster which will ensure continuation of regular livelihood activities. Here the genetic materials of crop and animals (domestic) should not create conflicting relation with environment, culture, biodiversity and food choices. Therefore availability and promotion of seed/gene materials resistant to natural disaster along with individual level and community level stocking of food and planting material with cyclone or Food proof buildings or cyclone shelters should be organised and along with necessary infrastructures where Village and panchayat level leadership will play a great role. Similarly, there should be network of village level Gene-seed-grain banks at panchayat and block level. Existing PDS should have link with the Gene-seed-grain banks where Grain bank component can have various links to food security approaches at community and panchayat level. This approach has inbuilt risk management component to address various risks due to disaster.
- Permanent or long-term infrastructure and system arrangements that ensures disaster management at both community and government level from pre-disaster to post disaster time.
• Easy availability of equipments, accessories, machines, required basic materials for income and livelihood security at household level
• Integration of NREGS, National Rural Livelihood Mission (NRLM) and other agriculture development schemes etc along with collaborative efforts with Ministry of Food processing industries, Save the Grain Campaign, etc
• Watershed management has great contribution to address both pre and post disaster mitigation activities. This will address issues people face in water, soil and forest sector.
• Easy availability of safe cooked or dry food, medicines and water for both human and domestic animals during the time of disaster under community/panchayat/block control should be initiated in the areas where natural disaster occurrences are regular and seasonal. It is a local level disaster preparedness approach. It is observed across the globe that this approach is very effective and conflict free in all the terms and directions.
• Government should have the right policy to avert environmental disaster and negative impacts of large scale urbanisation, industrial and mining operations in climate sensitive locations which affect the food basket of poor.
• Large scale plantation of mango, jackfruit, cashew, tamarind, Jamun, guava, neem and large plants and promotion of processed food and other products from those can not only ensure livelihood but also food security in the climatically disturbed areas. Those will take care of micro climatic changes and disturbances. Those will also manage to provide buffer supports to the economy during lean periods.
• Food processing at household level has great contribution during disaster. Therefore, capacity building of people keeping food security at the centre of the programmes should be organised in such a manner that media should play a significant role to inform people on techniques and process quite widely and make the information reach poorest of poor.
• Early warning systems and application of IT in this situation should be the integral part of above approaches. Therefore Village resource centres with satellite based communication system, Village knowledge centres and HAM radio etc pay significant role in disaster management, that ultimately address food safety, food availability and food accessibility issues quite effectively.

Therefore Food safety during disaster requires multipronged approaches supported with science and technology (both modern and traditional), systemic preparedness and community level approaches will not only ensure food safety but also manage to address larger livelihood security, human rights and gender equity related issues too.

J P Dadhich, Breastfeeding Promotion Network of India, Delhi
While dealing with the key challenges on food safety in disaster situations, infants and young children should have a special focus. This is one of the most vulnerable age group as regards to the post disaster morbidities and mortality. Major causes for mortality includes infections like diarrhea and pneumonia; and ensuing malnutrition due to faulty/inadequate food. For an infant below six months of age, most preferable food is mothers’ milk. Breastfeeding not only provides food and nutrition to these infants and prevent life threatening infections but also provides much needed warmth and psychological security. These benefits continue in the later half of the infancy and in the young children where breastfeeding along with freshly prepared nutritious foods should be provided. Women should be supported to feed their children optimally. Last year, the Solution Exchange MCH community came out with a special issue of E Newsletter on the World Breastfeeding Week global theme Breastfeeding: A Vital Emergency Response: Are you ready? The newsletter is available at: ftp://ftp.solutionexchange.net.in/public/food/resource/res01061001.pdf. An article contributed to this newsletter by me is also available.
Prasad Sankpal, Convergence of Agriculture Interventions in Maharashtra (CAIM), Collector Office, Wardha

The issue raised is very much important in Disaster Management. Because it is observed many times that after any disaster the further thing of relief or helping out the affected community should be done very carefully, otherwise it can be another disaster for the same people. Particular about the food security the problem can occur of food poisoning, food related health problems, etc.

To come out from this we should have a separate plan for the post disaster relief activities especially for the food supply in the relief camps. In Kolhapur Floods- 2006, we made a detailed plan for the relief camp food supply in which we did the following:

1. Camp population wise arrangements of Community Kitchen under the supervision of officer from district administration and reporting of it to the Additional Collector (Who was the head of the food supply related team of entire district)
2. Time table of food supply containing the type of food to supply in the camp (What will be the Breakfast, Lunch, Dinner, etc.)
3. Special arrangements for the children such as Milk.
4. If any organization wants to donate, provide, food related thing then it should be given to the District Administration and not directly to the camp site. One Special officer was appointed for this.
5. The special emphasis was on Health and Hygiene.

Yogendra Nanoskar, Civil Defence Corps Mumbai, Mumbai

I agree to problems raised by Wadgave Hanmanta, Medical Officer, Primary Health Centre Solapur (Maharashtra). In order to avoid the wastage of food I suggest the following:

1) Cooked food by Government should not be provided, but raw material should be provided and people should be encouraged to cook the food. This will have benefits as:
   • people will cook food as per their taste and choice as per age.
   • only required quantity will be cooked which will reduce the wastage
   • this process will keep people busy which will reduce their mental tension.

2) Only support agency staff should be provided with cooked food by Government

3) Supply of utensils will be an issue for Government during disasters

Regarding water supply, in case of Earthquake there are chances of damage to course of usable water and sewerage water, leading to mixing of these two and contamination of usable water. Hence, the course of usable water after disaster should be protected by support agencies. The area for drinking water, area for sanitation purpose should be earmarked and informed to people for its maintenance.

Similarly, sewerage system should be kept away from this usable water and restriction should be imposed on people.

I hope this will information will be useful for you. Will give more views further.

Abha Mishra, United Nations Development Programme, New Delhi
One of the biggest challenges is the quality of the food which reaches the affected community. It has been noticed that many agencies compromise on the quality, sometimes the packaged food provided is nearing the expiry date. Many a times administration/agencies have preconceived idea about what food should be given to people. They may end up giving wheat where rice is predominantly eaten or not cater to the needs of children below one year i.e. babies food or needs to old people

Another challenge is the transportation of these food materials. If I recall my experience of Orissa Super Cyclone, food was stocked in open area in Kalinga stadium and covered by polythene sheets which was also in short supply. The administration with outside support was trying its best to send it to different locations at the earliest but due to shortage of trucks or non clearance of roads etc. It was a nightmare because occasional rains and humid weather was playing havoc with the stored grains. (I)NGOs found it difficult to store their grains as they don’t own godowns and the private people usually hike the price of storage.

Another challenge is the distribution of the food material after it reaches the affected community - chaos when it is air dropped, chaos when it is being distributed sitting on trucks without a plan for distribution. We have no distribution charts nor do we have a system of monitoring who gets what and how many times. This results in stampede, rioting and injuries, getting more than required and people being left out especially women, old people, children, differentially abled.

Another challenge is food not reaching community in time, failure of the PDS system to deliver it on time, maintenance & hygiene of the community kitchen and conflict between APL and BPL many a times because BPL gets it faster than APL or other preexisting conflicts or tensions within the village or communities.

Misappropriation of the food materials by people in power (traditional as well as formal)- During Super-cyclone I found one of the Sarpanch had kept more than 2 qtls of rice with him by distributing less than the allocated amount.

The guidelines should clearly indicate the procedure to be followed for procurement, storage, transportation, loading and unloading and distribution. It should talk about log book maintenance for not only the material being received and distributed in each of the affected areas but also issue food cards to be maintained for each family. It should also fix a standard of quality based on the existing food safely guidelines prevalent in the country.

I would also like to suggest that the food inspectors be deployed in the affected areas for a duration with mandated authority to check all food being distributed by any agency government or non government and made response as well as penalized if found wanting along with the provider of the food items. Unless and until we make various parties responsible for the lapses, we will not be able to ensure food safety in disaster hit areas.

Another way of ensuring food safety after it reaches the community is by engaging pre-decided groups like the SHGs/ youth clubs to receive and cook or receive and distribute the food among the affected community be it in the relief camps or community kitchens.

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*Ashok P. Ghule*, District Disaster Management Officer (DDMO), Collector Office Thane, Maharashtra

Food is the most neglected issue in disaster management. We should take the help from SHG/CBO in this issue. Responsibility should be given to District Supply Officer and Rationing officer too. The involvement of social development officer should be increased in this issue to mobilise the NGO/CBO/SHG groups.
All said and done it is a herculean task. The food meant for the affected pass through several hands before reaching them. At every stage, one can find some pilferage/exchange/diversions either under instructions/sue motto depending on the local situation or wanton theft to create unrest/political upheaval. Integrity of personnel involved in supply and service is always found wanting, as the greed overcomes the service and everyone wants to make the best use of the opportunity to satiate their greed. It is a vicious circle. No government rules can prevent such happenings unless the attitude of the personnel are changed.

Food safety in disaster situations can be achieved only when the governments create infrastructure for storage/transport at disaster prone zones/areas. Secondly, a batch of volunteers be trained to take up tasks of distribution. These two things are not difficult to implement. Otherwise, such chaos, misuse would continue to play havoc in the life of the affected community.

Food security is the most crucial; more so during disaster times even though highly important during normal times. After RTI, RTW and RTE, should we not start advocating Right to Food.

This discussion provides us an opportunity to reflect upon the existing practices spotlighting on food safety and security during disasters. Past experiences during major disasters in India indicate a huge un-bridged gap between the need and provision of food safety and security during disasters, even after meticulous execution of logistics of mammoth scales. The response of various agencies to disasters usually fall short of ensuring food and nutrition safety, security and creating an enabling health and hygiene environment for the victims. In this regard, the guidelines and the standards streamline the operation of various agencies and ensure that the departure between intent and impact of ‘food and nutrition security, and ensuring health and hygiene of the communities’ is minimized. However, I would like to share a few points that may help the discussion.

Ensuring right based approach to food and nutrition security and community health and hygiene demands two basic prerequisites. A) Due emphasis on disaster preparedness in policy and practice, and B) a synergetic effort by agencies across government, voluntary organizations, educational institutions and community based institutions with private sector taking on an incremental lead.

Village level mapping on vulnerability, risk, resources, disaster calendar and disaster seasonality maps offer the base for preparedness at village level. The community learns to reduce its vulnerability by managing grain banks, seed banks, emergency funds, first aid kit and information with integrated training. Agencies from all sectors must participate in the capacity building process to strengthen food and nutrition security and health and hygiene of the community. Its pertinent to note that only a spirit of self-learning and preparedness of the agencies involved in the capacity building of the community has a potential to nurture effective collaboration and ensure that the planning is rooted with people/ agencies at risk (village based planning for communities and agency based planning for creating a culture of disaster preparedness at various institution level as institutions are affected equally during disasters). The loop is not completed unless a community/agency at risk leverages the benefits of government schemes/programs and support system to reduce its vulnerability. The plans prepared at the
community level indicating the existing capacity of the communities and desired provision of food and hygiene during disasters must be shared with agencies extending humanitarian assistance, including government, to mutually complement preparedness, prepositioning food and hygiene material and response effort. A detailed demographic, vulnerability and risk information coupled with GPS maps prepared by the communities and shared among HA agencies can help a targeted response to disasters and efficiently meeting food and health needs of a community during different phase of disaster.

Forging a partnership among agencies from all sectors is as vital as community preparedness to create a culture of disaster preparedness and risk reduction. Post disaster response has its limitation in preventing loss to life, livelihood and national economy. An equal investment on preparedness saves multi fold properties and life as compared to response alone. Further, it makes business sense for the private sector after the recent economic crisis to invest on preparedness, within the business house and outside as well. The private sector can play a major role in advancing and commissioning technology for disaster risk reduction and early response. Educational institutions, especially technical universities, have the capacity and willingness to advance knowledge on local coping mechanisms, disaster preparedness practices, and technology and community mobilization alongwith incubating a young generation with skills to better cope with recurrent disasters.

I have just mentioned a rough outline of the scope of a cross sectoral strategy for disaster risk reduction and fostering a culture of disaster preparedness, starting with communities, to ensure that disaster affected communities are food security and community health and hygiene is strengthened.

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**L. P. Semwal, Shri Jagdamba Samiti, Rishikesh**

We are working in Uttarakhand Himalayas with community groups for promotion of agriculture produce processing and value addition by promoting farmer companies as joint ventures with experienced corporates.

We have an experience of serving the disaster affected villages of 1999 earthquake and few other land slides/cloud burst effected situations.

In our opinion ready to eat food processing and storage for immediate distribution is essential.

To promote one ready to eat food processing center with people forum Ghansali, Tehri Garhwal (Tehri dam effected area in upstream of river) and THDC India ltd. is under consideration to process the coarse grains (grown locally by farmers) for ready to eat food under the technical assistance from CFTRI.

Another key issue is storage and fumigation for which we have partnership with a company from Netherlands: [http://www.b-cat.nl/Basis.aspx?Tid=6&Lid=102&Lit=TEKST](http://www.b-cat.nl/Basis.aspx?Tid=6&Lid=102&Lit=TEKST)

Hopefully, we'll have this center operational soon.

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**Kedareswar Choudhury, Darabar Sahitya Sansad, Orissa**

I would like to point out certain contextual issues in this regard.

1. In our country we do not have a standard food supply policy or practice to the target communities in normal condition, be it the minimum chalory intake or physical quality of foods
supplied. Take for example of the foods supplied to Mid-Day meal programmes in schools are of sub standard in quality and far less than calory requirement, most of the time.
2. In disaster situation the sources of supply are many and the immediate objective is always to reach out the affected community and meet their immediate food need. The quantity and quality of the food supply takes the back sit obviously.
3. Although the humanitarian organisations, UN agencies and civil society organisations have started discussing and even have practised some minimum standards in food supplies following SPHERE standards, still there is a long way to go in terms of ADAPTING the minimum standards in to local conditions (country and state specific). Second challenge is that the Centre and state Governments being the largest players in responding to the disasters have not played proactively in ensuring minimum standards either in policy framework or in practical mode.
4. Minimum standards can well be ensured in a controlled environment like in permanent relief camp where either cooked or raw foods are provided for a longer period continuously. But given the nature of the relief operations in our country (both by Govt. and non Govt. agencies), where mostly the raw food materials are distributed to target groups in a spread geography, it is quite challenging to ensure minimum calories.
5. There exist a large gap in coordination among the Govt. and non govt organisations in responding to disasters. A continued and cordial coordination would help in ensuring efficient management in sourcing quality materials, proper transportation, pre-positioning of stock, arranging godowns for stock etc.

There happens to be lot of debate on this issue. But the issue need to be looked at from humanitarian point of view, which mean the minimum standards has to be ensured in food supply to disaster affected.

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**S.S. Thorat**, Department of Food Science & Technology, MPKV, Maharashtra

The query placed for comments on food safety during disaster management is a very important issue of national interest.

Highlight key issues and challenges in the present food supply chain during Disaster Situations

In global food market now consumer safety is the top most priority. In normal course to fulfill this is a challenge because food is very complex commodity and has to face number of biological, chemical and physical hazards. Due to knowingly and unknowingly contamination of food with these hazards, the world population is suffering from number of short term, long term illnesses or death. Almost 60 to 70% of the illnesses now prevailing in the society are due to food, water, air borne microbial infections and intoxications, toxicities due to heavy metal, pesticide residues, veterinary drug and other chemical residues. The infections are causing sporadic, epidemic and pandemic out breaks through out the world.

Currently around 85,000 chemical agents are produced and used in industrialized countries out of this less than 45% have undergone basic toxicological tests and many of them are causing severe toxicities and casualties leading to gastroenteritis, congenital malformations, asthma, cancer and neurological and behavioural disorders. Majority of these chemicals are found in water, air, soil, and foods. The flood, fire, cyclones, earth quakes etc are national disasters, which could jeopardize the safety of food.

Following natural disasters, food in affected areas may become contaminated and consequently be at more risk for outbreaks of foodborne diseases. Poor sanitation, including lack of safe water and toilet facilities and lack of suitable conditions to prepare food leads to mass outbreaks of foodborne diseases. As persons suffering from the direct effects the disaster may already be at risk through malnutrition, exposure, shock and other traumas, it becomes essential that the food they consume is safe. This is particularly important for foods for infants, pregnant women and the elderly who are most susceptible to foodborne diseases.
WHO has prepared guidelines [http://www.who.int/foodsafety/consumer/5keys/en/] for public health and other authorities on the key food safety issues to be considered in disaster situations.

The food infection or intoxication due to agents include Vibrio cholerae, amylobacter, Salmonella, Shigella, and the diarrheogenic Escherichia coli may lead to syndromes, including fever, acute dehydrating diarrhea (cholera), prolonged febrile illness with abdominal symptoms (typhoid fever), acute bloody diarrhea (dysentery), and chronic diarrhea (Brainerd diarrhea) and other complications include temporary anemia, profuse bleeding, and kidney failure. And by a group of viruses called calicivirus, also known as the Norwalk and Norwalk-like viruses may be contained in flood waters and get on food and food packaging that have been in flood waters.

# Identify gaps in the regulatory framework, quality standards and existing facilities of the state and private responders providing food supplies during disasters.

We are building very strong food safety norms through introduction of Food Standards and Safety Act 2006 for routine, however this framework as such will not be practical during disaster management. So in this situation, we should consider the lower side safety limits prescribed for different hazards.

# Components that the proposed NDMA Guidelines on "Minimum Standards for Water, Food, Hygiene & Sanitation" need to consider to ensure food safety during disasters.

The Food Hygiene and Sanitation Law, should be introduced that cover general principles, food hygiene, food additives, packaged and containers of food, the enactment of regulations, and hygiene standards on food, the administration of food hygiene, the supervision of food hygiene, penalties, and miscellaneous clauses including definitions.

The peoples should be trained to identify and throw away food that may not be safe to eat.

Clean and sanitize food-contact surfaces. Ensuring Food Safety in the Aftermath of Natural Disasters is also taken into account.

# References of any individuals or organizations who can participate in the consultations for preparations of these standards.

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**D. Raghunatha Rao, National Institute of Nutrition (ICMR), Hyderabad**

The topic which has been chosen for the discussion is of topical interest and should be given top priority by all the members of the community to provide different possible and feasible strategies to tackle food safety aspects at the community level particularly in disaster situations. Although the points which I have mentioned here in the discussion have no direct relation to the food safety in disaster situations but would throw some light for the improvement of food safety at the community level. The Food and Drug Toxicology Research Centre/National Institute of Nutrition has done pioneering work in this field. Uniform and strict implementation of Hazard Analysis and Critical Control Point at every level, like house hold level, food industry level, food vendor level, food supply chains, food fairs, eat streets etc., and periodical monitoring of these aspects by Govt agencies would definitely improve the situation far better in the country than the present level. Food safety education should also be given top priority by the Government and Non Government agencies for the home makers, food vendors and workers involved in food industry.

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**Gopi Ghosh, FAO India, New Delhi**

From farm to table, scientific advice provides the basis of both national and global food standards and control systems to ensure consumer protection and production of safe food. Moreover, food safety measures improve the sustainability of food supply chains, facilitate trade, and work to ensure food security both locally and globally.
The ‘Science for Safe Food’ Strategy document (http://www.fao.org/ag/AGN/agns/files/SFSFbrochureRev31.pdf) (PDF; Size: 630 KB) is part of FAO's Strategic Objective of Improved Quality and safety of foods at all stages of the food chain.

The fact that food related scientific advice contributes toward important Millennium Development Goals, where food safety not only enhances the health and wellness of populations, but also acts as a vital element to ensuring food security, poverty alleviation and economic growth through improved food production and trade, will bring in added perspectives to this discussion.

Many thanks to all who contributed to this query!

If you have further information to share on this topic, please send it to Solution Exchange for the Food and Nutrition Security Community in India at se-food@solutionexchange-un.net.in or se-drm@solutionexchange-un.net.in with the subject heading “Re: [se-food] Query: Food Safety in Disaster Situations: Key Challenges and Recommendations - Experiences; Advice - Additional Reply.”

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