

GSFC
MEMBER INDUSTRY-OIECR




PRESENTATION ON
**“MUTUAL AID FOR DISASTER MANAGEMENT &
SAFETY MANAGEMENT SYSTEM AT GSFC”**
BY
J S SONI
OSD (U&EC, S & FS, EMC, FMU)



GUJARAT STATE FERTILIZERS & CHEMICALS LIMITED
www.gsfclimited.com

GSFC AT GLANCE



- GSFC is integrated multi-product, multi-location Fertilizers & Petrochemicals complex. Its Vadodara Unit is spread in 698 acre of land, incorporated on February 15, 1962.
- GSFC, Baroda Unit is one of the leading producers of Caprolactam and Nylon-6, apart from other Petro-Chemicals.
- GSFC is Renowned for its Sardar Brand Fertilizers & GUJLON.
- Excelled performance under Global Competition also.
- Strengthening the farmers' hand for increased Agricultural produces by providing them latest technology and information .
- Turnover of Rs. 6253.30 Crores in the year 2012-13.

INTEGRATED MANAGEMENT SYSTEM



GSFC's Integrated management System consists of:

- ISO 9001:2008 Quality Management System.
- ISO 14001:2004 Environment Management System
- BS OHSAS 18001:2007 Occupational Health & Safety Management System.
- ISO 50001 Energy Management System
- Responsible Care Logo by Indian Chemical Council (ICC).

INTEGRATED MANAGEMENT SYSTEM POLICY (COVERING RESPONSIBLE CARE, QUALITY, ENVIRONMENT, OCCUPATIONAL HEALTH, SAFETY AND ENERGY)

We, at Gujarat State Fertilizers & Chemicals Ltd (GSFC), engaged in the business of fertilizers, chemicals and industrial products are committed to customer satisfaction, guiding principles of Responsible Care and continual improvement in our Integrated Management Systems and performance.

To achieve this, we commit ourselves to:

- Comply with all applicable legislation and other requirements to which we subscribe;
- Conserve natural resources in particular water, raw materials and promote the development of green surroundings;
- Incorporate suitable technologies & methods for quality improvement, energy efficiency, prevention of injury, ill health and pollution;
- Eliminate, minimize or control the environmental aspects as well as occupational health and safety (OHS) hazards and risks;
- Provide high degree of safety promotion and encourage safe behavior among all;
- Proactively monitor the incidents, unsafe conditions, unsafe acts, hygiene as well as promptly report and act on such conditions;
- Ensuring availability of information and all necessary resources to achieve objectives & targets;
- Comply work procedures with self discipline and hold everyone accountable for their responsibility;
- Promote usage of renewable energy, wherever feasible;
- Strengthen awareness, skills and competence of employees and contractors' workmen and also foster dialogue with vendors, customers and community;
- Periodically review the adequacy, suitability and effectiveness of Integrated Management Systems;


We shall communicate this policy to all personnel working with or on behalf of GSFC and to interested parties on demand.


Date : 15 July, 2011


ATANU CHAKRABORTY IAS
MANAGING DIRECTOR

GUJARAT STATE FERTILIZERS & CHEMICALS LIMITED

Fertilizernagar - 391 750, Vadodara, Gujarat.

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STATUTORY REQUIREMENTS

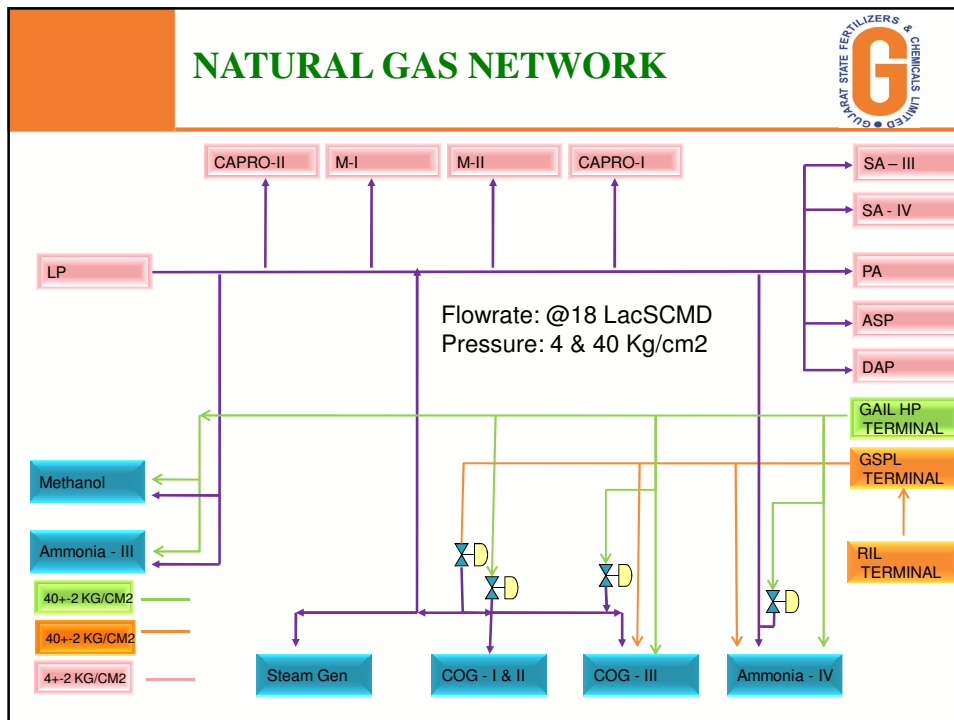


- The Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989 (Amendment -1989/1994:2000)
- The Gas Cylinders Rules, 2004
- The Petroleum Act, 1934 & The Petroleum Rules, 1976 / 1995 / 2000
- The Static and Mobile Pressure Vessel (Unfired) Rules 1981
- The Factories Act, 1948 & Gujarat State Factory Rules, 1963
- The Poison Act and Gujarat Poison Rules 1984
- Civil Aviation Regulations
- Gujarat Safety Officers, Duties Qualifications & Service Conducts Rules and Notifications, Year 1983
- Solvent Order for Naphtha & Benzene

PROCESS CONDITIONS NEED CARE



- Pressure : 220 Kg / Cm² (Urea Synthesis Reactor)
- Temperature : 1060oc. (Sulphur Combustion Furnace)
- Storage : Liquid - Ammonia 10,000 X 2 MT (Atm Storage Tanks)
 - Gas : 1200 M³ (NO Gas Holder CEP-HAS)
 - Solid :: 20,000 MT (Elemental Sulphur)
- Ammonia Pipe Line Net Work is spread connecting number of plants.
- Natural Gas Pipe line (U/G & A/G) is spread in whole the complex.
- Major Toxic Chemicals
 - Gas : Chlorine, Ammonia, SO₂, NO, NO₂, NO_x, CO
 - Liquid : Benzene, Diphyl, Methanol
- Flammables, Gas : Natural Gas, Hydrogen, Off Gas, Process gases
 - Liquid : Cyclo-hexane, Naphtha, Benzene, MEK, Anone, Methanol
 - Solid : Sulphur
- Major Corrosive chemicals: SA, Oleum , Nitric Acid, HCl



OIECR (OFFSITE INDUSTRIAL EMERGENCY CONTROL CENTRE)

➤ **OBJECTIVE: (Mutual Aid System)**

Accident may occur any time and to minimize the damage, occupier has to prepare 'On-Site Emergency Plan'. When management of the unit can not control the emergency situation, LCG/DCG have to control the industrial emergency. Under Government's provisions for preparation, planning & response on industrial emergency vide different statues like, Haz Chem Rules 1989 (2000), Chemical Accidents (Emergency planning, Preparedness & Response time Rules-1996, The Factories Act-1987, Disaster Management Act-2005, Gujarat state Disaster Management Act 2001 etc. OIECR (Mutual Aid System) has been set up for controlling off site emergency.

OIECR – Off Site Emergency



- **Off Site Emergency:** When emergency could not be controlled with 'On site emergency Plan' help of OIECR is taken and the emergency is called 'Off Site Emergency' & controlled by LCG/DCG. When call is received by control room, the same is communicated to member industries and help from member industries is sent as per the action plan to control the Emergency.

Why Off Site Emergency Action Plan ?



- **Off Site Emergency Action Plan:** As per provision under schedule-12, rule 14(1) of MSIHC rules 1989(2000) under EPA-1986 requires an off site emergency action plan to be prepared by LCG for every Industrial pocket.
- As per Chemical accident rules-1996, LCG is required to take prompt actions by staff, persons of various agencies, emergency teams, expert persons & outsiders when called for (Off site emergency). Minimizing the effect on people may be achieved by prompt actions, rescue, evacuation etc.

OIECR – Associated Industries

➤ Associated Industries:

1. GSFC 2. IOCL / GR 3. RIL
4. Diamines & Chemicals 5. GP P Ltd
- 6 GACL 7. GAIL 8. GIPCL
9. Nandesari Industries Association
10. BPCL 11. SABIC 12. HWP
- 13.GSPL

OIECR – COTROL ROOM



- Established in April 1994 under governing council headed by Collector & Magistrate, as per the rules & regulation- Societies registration act 1960, Bombay Public trust act.
- Maintain Emergency equipments, facilities, relevant records, communication net work, man power, Updated emergency contact numbers, SOPs/instructions etc.
- A Manual for Off site Emergency handling is maintained & updated from time to time.

Probable Major Accident Scenarios



- Depending upon chemical properties of hazardous substance industrial emergency may occur.
- Fire, Fire & Explosion, Toxic/Flammable/Poisonous Liquid release, Gas dispersion, Explosion, collapse of building, Bursting of vessel.
- Floods, Earthquake, Lightening, Cyclone, stormy rain, tornado etc. Natural calamities.
- Workers unrest, rail-derailment, tanker accident, pipe line leakage, Bomb threat, terrorism etc.

OIECR- LOCAL CRISIS GROUP



- Local / Onsite emergency plan for industrial Area.
- Ensure dovetailing of the local emergency plan with District off site emergency plan.
- Train S & FS personnel for chemical accident management.
- Educate the population likely to be affected in a chemical accident about the remedies and preparedness.
- Conduct at least one full scale mock drill of chemical accident at a site every six months and forward report to District Crisis Group.
- To respond to all public inquires on the subject.

Stages of Emergency Plan



- (I) Pre-Emergency Period: Normal working period for preparation, planning, obtaining resources/facilities etc.
- (II) During Emergency: Performing specific duties/responsibilities of emergency services in planned /systematic way to handle emergency in minimum period & coordinated way under chairman's command.
- (III) Post Emergency: Safe withdrawal of emergency, safe rehabilitation, enquiry, investigation on cause, improvement of resources, modification of the plan, corrective steps-Meeting/ Report submission to State Crisis Group.

Level of Emergency



- On the basis of seriousness, magnitude of probable severity, response requirement & level of control requirement following stages of emergency categorized.
- Level-I: Emergency that can be effectively, safely managed with own resources contained within site, location & has no impact on outside the site.
- Level-II: While level-I is uncontrolled by the management with own resources & additional support required from mutual aid / LCG/ DCG or is likely to endanger life of public, environment or industrial asset/reputation. This is level-II On Site Emergency.
- Level-III: Emergency/Accident with off site impact, could be catastrophic & likely to affect population, environment-inside/outside and control is required by DCG. This is declared when not controlled by unit & LCG.

OIECR – STRUCTURE



- Chair Person (Sub Divisional Magistrate)
- Member Secretary (Asst.DISH)
- Members
 - Fire Commanders of Member Industries, VMC.
 - Police Dept.
 - Health & Medical Departments.
 - Taluka Development Officer
 - Representatives - MAH Unit/Expert persons
 - Transporters of Hazardous Chemicals
 - Editor, Newspaper / Media
 - Civil Defence
 - Sarpanch
 - Regional PCB Officer (GPCB)

OIECR – MAN POWER TEAM



SR. NO.	DESIGNATION	TOTAL
1	Member Secretary -OCR	01
2	Shift Officers	06
3	Wireless operator/Dispatch Riders	01
4	Treasure (part time)	01
5	Office boy	01
	Total	10

OIECR – FACILITIES PROVIDED





- Communication network –Wireless, Telephones, Cell Phones.
- Control Room Operation: Round the clock
- Conference Room: Capacity of 30 participants
- Multimedia and Over head projector for presentations/seminars.
- Audio/video equipments and Camera/ Video Camera
- Computers for data retrieval and preparation of incidence reports.
- Maps of Petrochemical Complex Area, Nandesari Industrial area and VUDA for location of MAH factories including railway crossing and major road.
- Display of name of emergency commanders/Fire commanders & medical commanders of Major Industrial Units.
- Communication Chart of concerned officers of industries and Govt. authorities.


OIECR – SUPPORT SERVICES




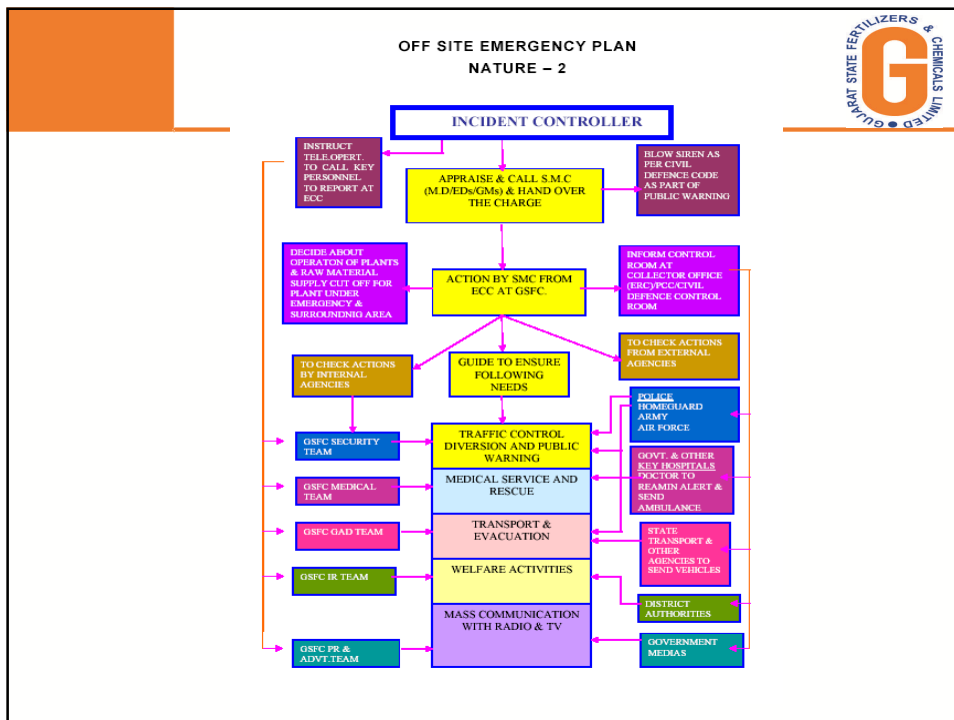
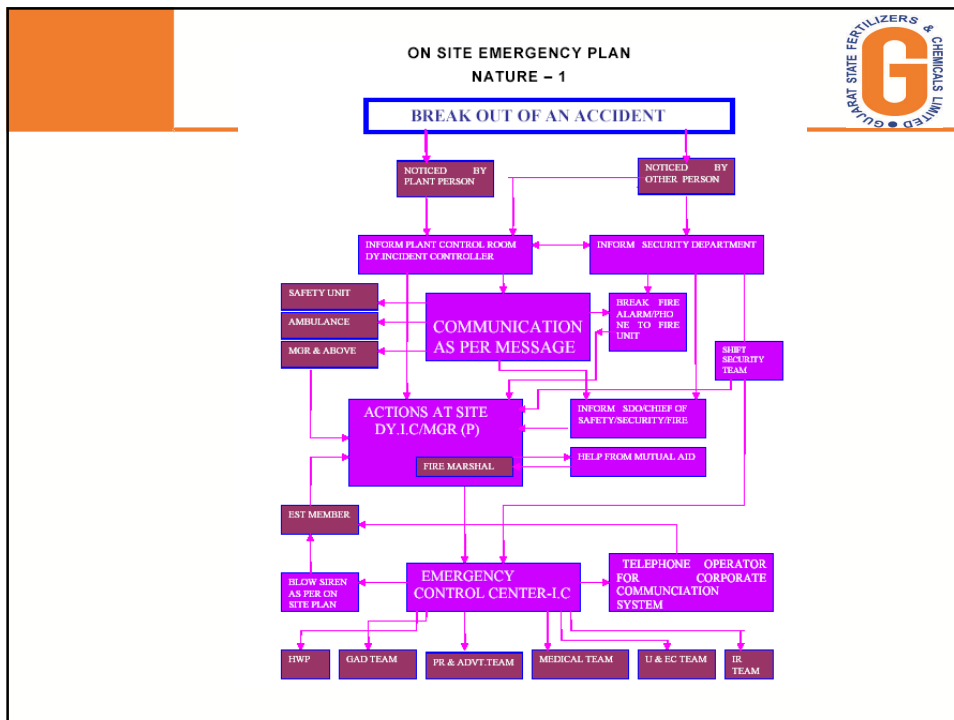
- Collector & District Magistrate- Vadodara
- Commissioner of Police
- Municipal Commissioner
- Jt. DISH
- Chief Officer of Fire Brigade- VMSS
- Executive Engineer (Road & Building)
- Dy. Commissioner of Police- DSP (Rural), DCP (North), ACP (North), Local
- Medical superintendent – SSG Hospital
- Home guards
- District Health Officer
- Civil Defence
- Divisional Controller (GSRTC)
- Regional Transport Office (RTO)

OIECR- Role & Responsibility		
	Response Authority	Purpose
1	Collector & District Magistrate	<ul style="list-style-type: none"> To control the situation by subordinates. Arrange for providing interim relief to the affected people based on claimed applications.
2	Emergency Commander	Managing Coordination Structure
3	Fire Commander	Fire Services- Spill control of fire
4	Medical commander/civil surgeon/District health officer	Medical Service
5	Police commissioner/Evacuation commander	Traffic control by Diversion arrangement etc. As evacuation commander arrange for emergency lighting, battery or diesel operated flood light.
6	DCP (North)	Evacuation & Response operation.
7	SP/commandant security CISF-GR/RGSS- RIL	Traffic control arrangement & Security commands and control

OIECR- Role & Responsibility		
	Response Authority	Purpose
8	VMSS-Municipal commissioner / chief fire	<ul style="list-style-type: none"> As rehabilitation coordinator Fire brigade/water supply arrangement
9	Jt. DISH	Expert advise for minimizing severity.
10	Member secretary-OCR	As a functional head for liaison work.
11	Safety dept.	<ul style="list-style-type: none"> Advise for safety precautions for provision of PPE. Waste disposal work & spill control for wastes.
12	Technical coordinator (Experts from H,S & Prod. Dept)	<ul style="list-style-type: none"> To assess and response strategy to control hazardous zone. Suppression of hazardous gas or vapor release. Structural inspection work Undertake accident investigation & document
13	Key personal & Nodal officers	Advise for technically control of situation. As coordinator for public works, clean up of spills.
14	District Development Officer	Monitoring collector's instruction As Material coordination for PPEs, other material/equipment/medicines etc.

		OIECR- Role & Responsibility		
Response Authority	Purpose			
15	Civil Defence Control Room SRP group	•Managing mass rescue/casualty		
16	GSRTC	Providing transport facility for Evacuation work		
17	Regional transport office	•Providing transport facility for evacuation work. •For water supply tankers		
18	Railway control room	•Railway crossing freeness for evacuation •Evacuation by residence.		
19	EME	•Rescue & Casualty management		
20	Air Force	•Rescue & Casualty management		
21	Crane Services	Crane for urgent lifting/shifting work		
22	ONGC/GAIL Crane Service Provider	To provide equipment for rescue people. Crane for urgent lifting/shifting work		

		OIECR- Role & Responsibility		
Response Authority	Purpose			
23	Executive Engineer Central Workshop Executive Engineer Narmada	•For equipment arrangement		
24	PDIL	Equipment skill advise		
25	Road & Building-PWD Narmada authority	•Special tools, skill for rescue people.		
26	Deputy Director of information	•Dealing with Media officer for conveying information		
27	District information officer	•As a Liaison & PR coordinator for Educational institutions, cinema halls, hospitals & prisons. Coordination with LCG.		
28	Communication Media	•For appealing NGO for Rehabilitation work etc.		
29	Regional officer- GPCB	As a role of safety coordinator		
30	MGVCL- Vadodara	Utility-coordinator		
31	GM-Telephone - Vadodara	For emergency network of communication preparedness.		
32	DCG LCG	Plan updating if so required. Also provide training to community & staff.		



SAFETY TRAINING



Contractor supervisor training.



Safety site Talk for labours

SAFETY TRAINING FOR PUBLIC



Public Awareness Campaign for villagers

SAFETY MANAGEMENT MOCKDRILLS - REHEARSALS AND TRAINING



- Yearly 8 Mock & 2 Evacuation Drills since 2000
- Monitoring by a Committee of 13 Members appointed by Managing Director. Safety Unit is Coordinator
- Mockdrill Scenario, Date And Time decided without prior information to Plant.
- Every Time new Scenario from the probable 150 emergencies is selected
- Preparation of reports and circulated to all concerned.
- Compliance of observations is monitored by Safety Unit.
- Award to best performers of Mock drill.
- Awards for Actual Emergency handling

GSFC – SAFETY UNIT- FUNCTIONS



- Compliance of Statutory Requirements- licenses , Approvals/ NOC, Safety Check lists , GSFC Safety Manual and On Job Risk Assessment.
- Safety training, talks ,class room lectures, demos & creating safety awareness by Bulletins , e mail, Messages, displays, Celebration of NSD
- Conducting Mock Drills, Evacuation Drills and participating in Offsite drills.
- DESHCM and Contractors' Safety Apex Safety Committee meetings.
- Preparation/updating-On Site Emergency Action Plan, MSDS, safety literature
- Performance in Emergency. Accident, Near Miss & Incident Investigation, Analysis, Suggesting Remedies , Monitoring & MIS
- Safety Inspections & Audits (Internal & External)
- HAZOP ,QRA studies of modifications in existing Plants and Sp. Study/ Survey

Safety checklists



- Plants
- Tank farms
- Buildings, Platforms, Staircases, Walkways
- Bagging & Ware Houses, Pallets
- Mobile lifting Machines
- Plant Instrumentation
- Electrical Transformer, Substations,
- Hand tools, Scaffolding, Portable ladders
- Conveyor Belts
- Tanker Filing
- Licensed premises etc, are prepared in consultation with concerned Dept/ discipline.
- Their periodical filling by concerned Dept/Plant/discipline is monitored.

Work Environment Monitoring



- At GSFC Work Environment is monitored by:-
 1. A GPCB approved third party (Thro EC Dept) at about 47 locations in various Plants for contaminants like Benzene, HF, SO₂, NO_x & Ammonia.
 2. By a GPCB approved third party at about 4 locations in various Plants for Suspended Particulate Matter (RSPM).
 3. By Safety Unit at about 80 locations in various Plants for noise.
 4. By Safety Unit at various locations for SO₂, NO_x, Ammonia, HF, Benzene

Safety Awareness Web Site



- GSFC RC (QEOH & Safety) Policy (English & Gujarati)
- GSFC Safety Manual
- GSFC Onsite Emergency Action Plan
- GSFC COSHH Guidelines and MSDS (9 points MSDS of about 365 chemicals)
- GSFC Safety Code (19 Nos)
- GSFC's Product MSDS (16 points MSDS as per International requirement)
- Day to Day Safety Observations
 - * Photographs of daily unsafe actions/ conditions
 - * Internal Audit Report
 - * Mock Drill Photos
 - * various checklists
 - * Learning from our own experience
- Occupational Health & Safety Management Audit Report (External Audit Report)
- GSFC Environment, Health & Safety (EHS) Bulletin
- Transport Emergency Cards (TREM Card)
- A pocket booklet [Safety In Your Hand \(Gujarati/ English\)](#)
- Safety Quiz (if any)

ENVIRONMENT MONITORING



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