



प्राकृतिक गैस पाइपलाइन पर ज्ञान साझा कार्यशाला
KNOWLEDGE SHARING WORKSHOP ON NATURAL GAS PIPELINES

ERDMP
An Approach to Loss Prevention & Control

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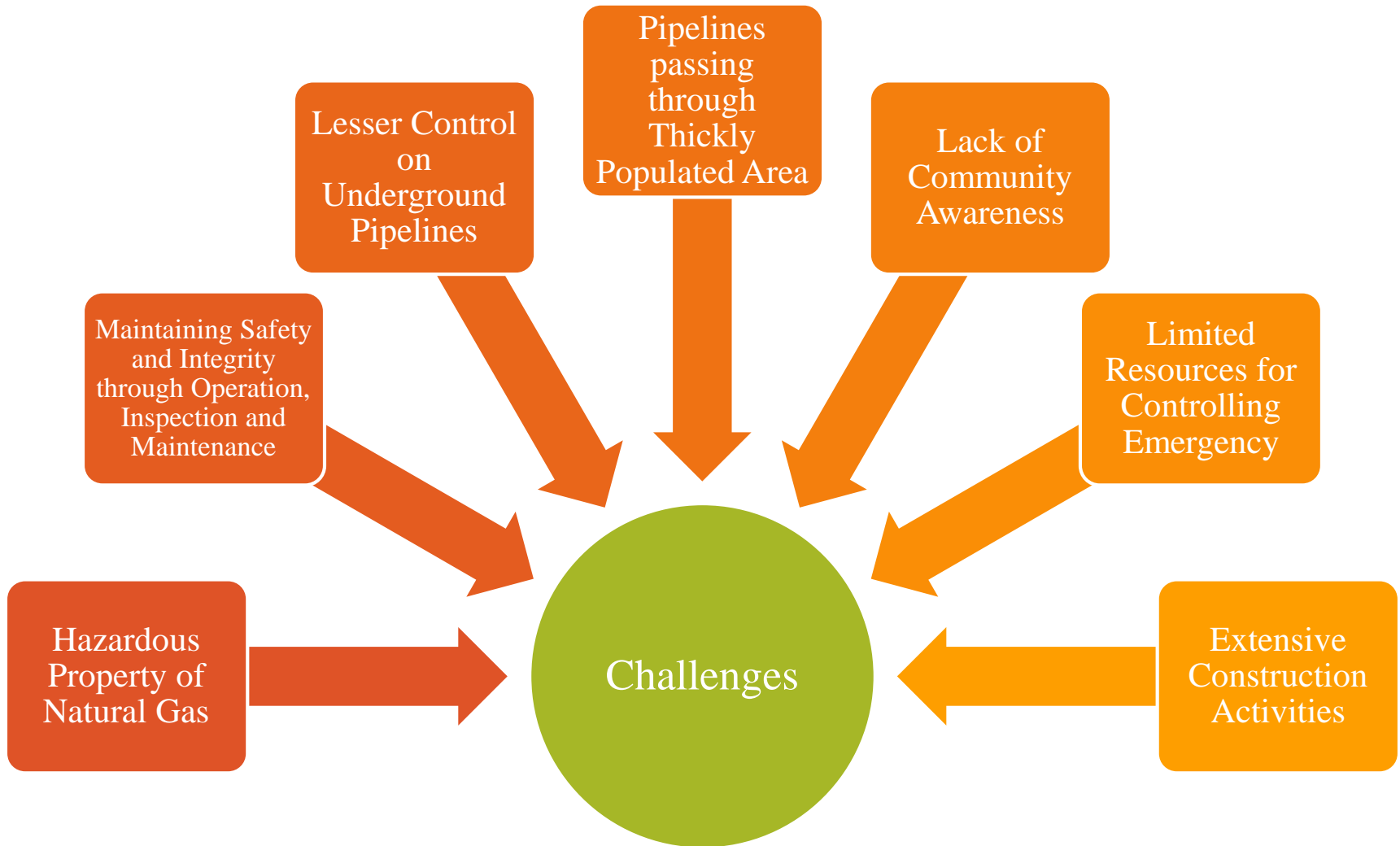
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4th Floor Conference Hall Jubilee Tower, Noida

Introduction

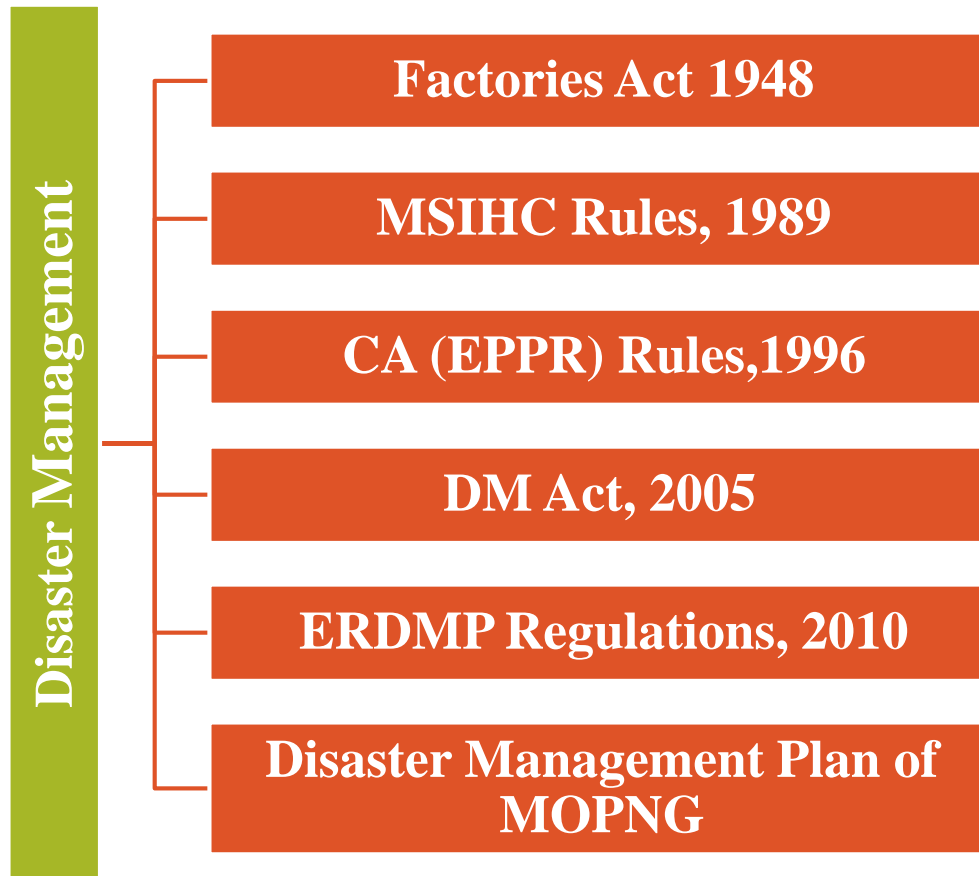
- Gas Pipeline infrastructure is an Economical and Safe Mode of transporting the Natural Gas by connecting gas sources to gas consuming markets.
- Natural Gas is highly flammable substance, transported through Cross Country Pipelines and City Gas Distribution Networks at high pressure often close to centres of high population or through areas of high environmental sensitivity poses significant risks.
- Provision of appropriate Safety and Integrity Measures are Essential for Safe and Uninterrupted Operation of Pipeline System.



Safety in O&M: Challenges in Pipelines



Disaster Management Legislation/Guidelines in India



Brief of Legislations

Factory Act 1948

- Compulsory disclosure of information
- Dangers, health hazards, measures to overcome the same to Chief Inspector of Factories and Local authorities
- Preparation of Emergency Plan
- Permissible Limits of exposure of Chemicals is prescribed – third schedule

MSIHC Rules, 1989

- Framed under EPA
- More than 600 chemicals are identified to be hazardous and toxic
- Preparation of onsite emergency plan by industrial installation
- Preparation of On Site/Off Site Emergency Plan
- Information to public liable to be affected
- Responsibility of MAH Installations

CA (EPPR) Rules, 1996

- Framed under EPA
- Constitution of Crisis Group: Central, State, District & Local Crisis Management Group
- Crisis Alert System
- Information to Public

DM Act, 2005

- Establishment of National Disaster Management Authority
- Lay down the policies on Disaster Management
- Enforcement and Implementation

Emergency Response and Disaster Management Plan

- Petroleum and Natural Gas Regulatory Board (Codes of Practices for Emergency Response and Disaster Management Plan (ERDMP) Regulations, 2010 was notified on 18th January 2010.
- The objective of regulations is to develop an ERDMP that should be concise and informative which provides quick reference to the action plan to determine important functions that are being carried out to manage the emergency effectively.



Pre-Emergency Planning

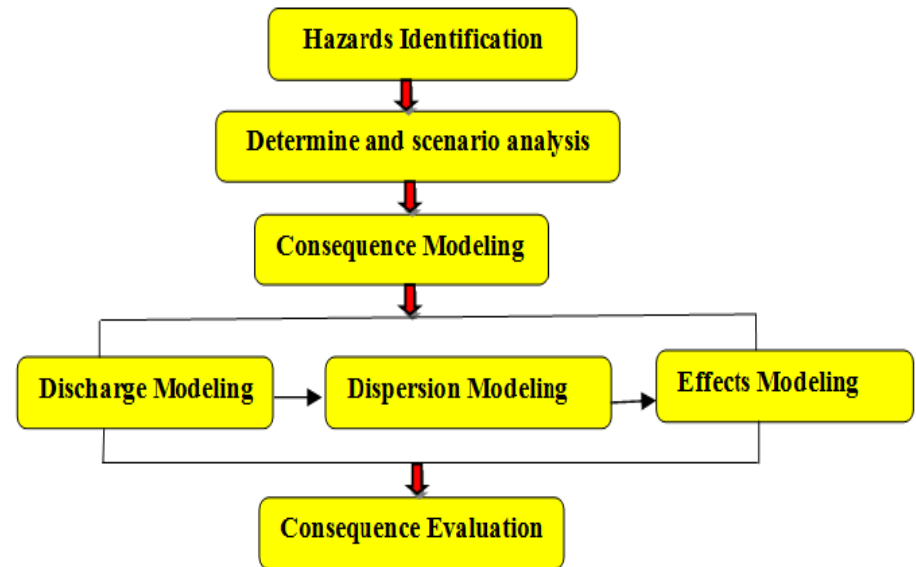
Consequence Analysis is done in order to form an opinion on potentially serious hazardous outcomes of accidents and their possible consequences on people, property and environment.

Consequence Analysis Methodologies:

- Discharge Rate Model
- Flash or Evaporation Model
- Dispersion Model
- Fire and Explosion Model

Method of Determining the Consequence Effects:

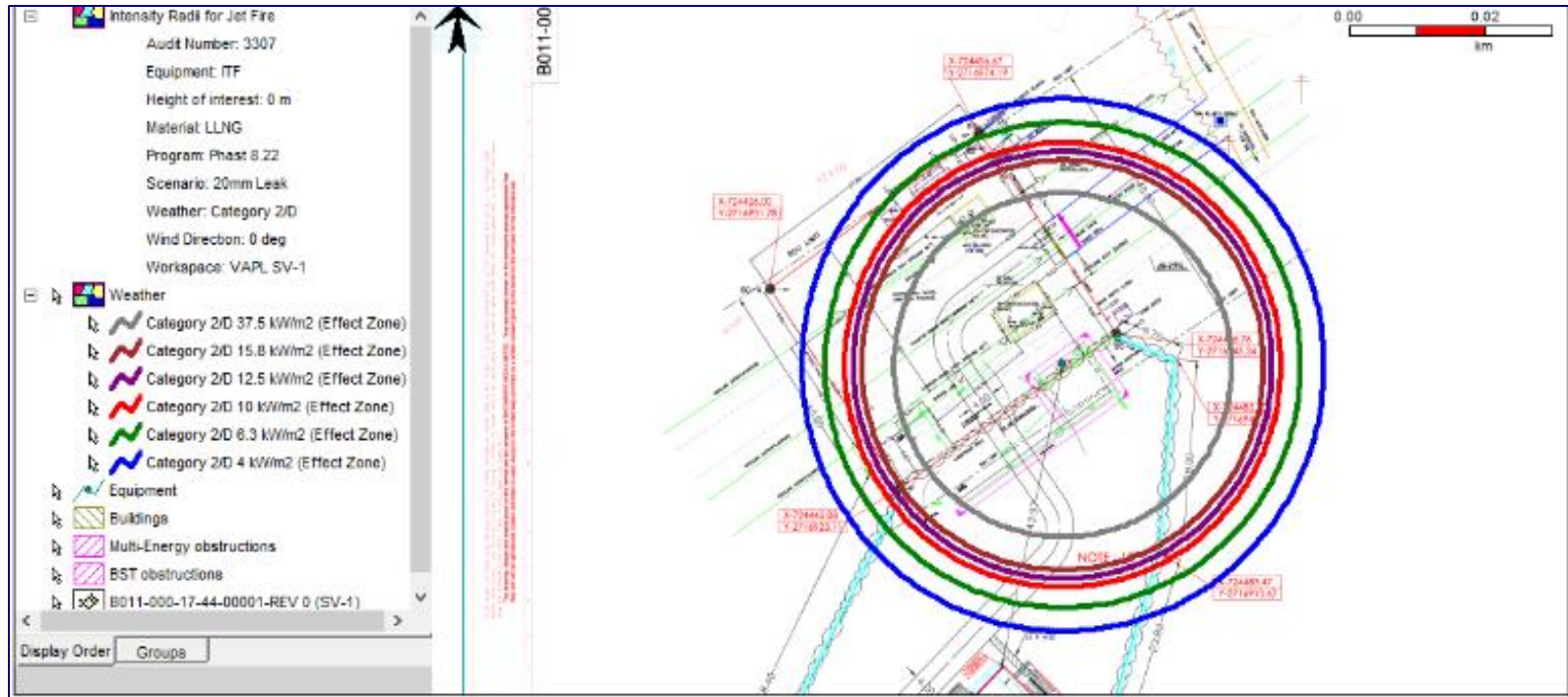
- Damage caused by Heat Radiation on Material and People due to Jet or Flash Fire
- Damage caused by Explosion on Structure and People



Resources: Research Gate

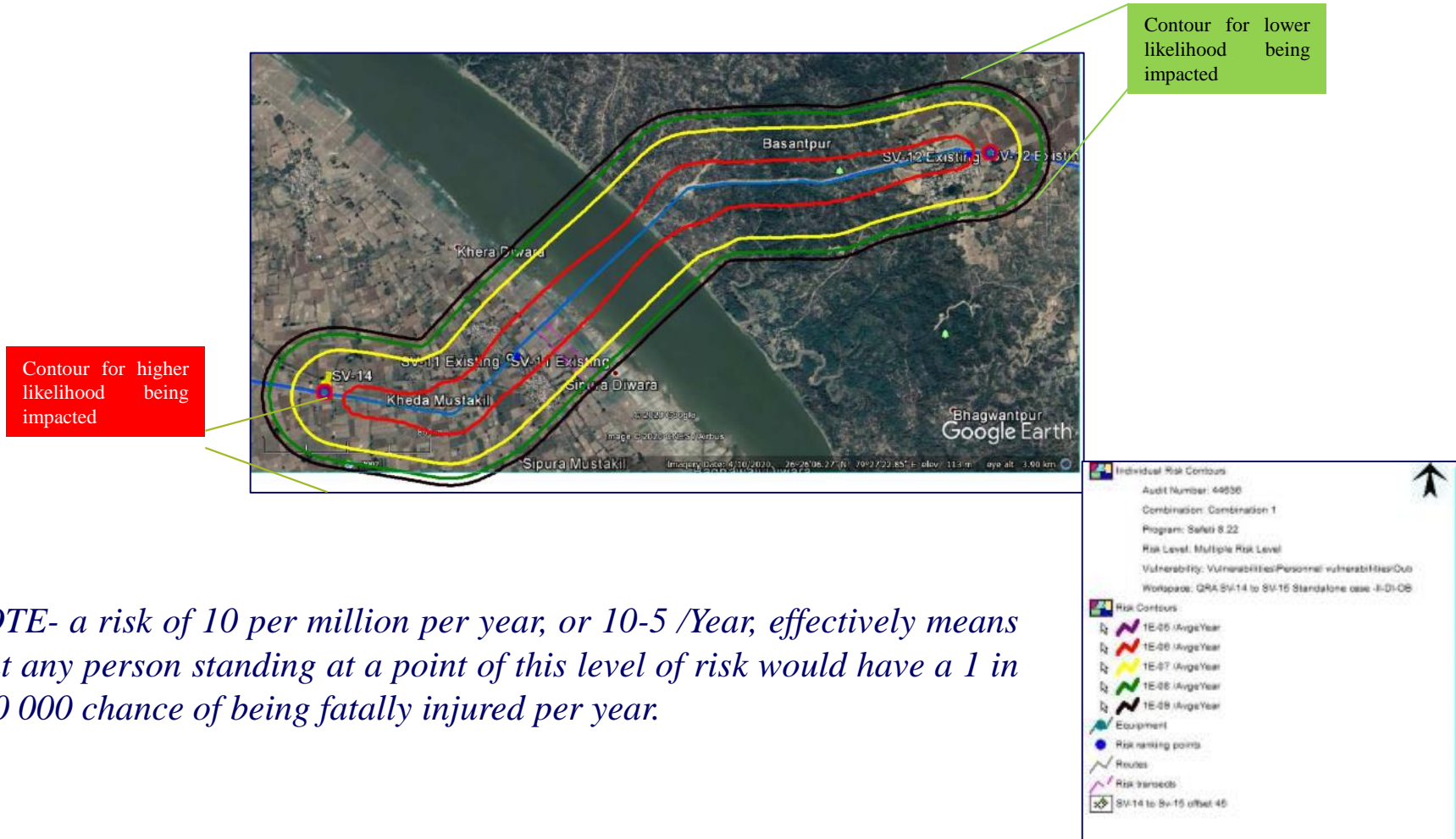
Pre-Emergency Planning

Location	Release of Gas (Kg/Sec)	Distances for different Thermal Radiation (KW/m ²) intensity and 2D Weather Condition for Jet Fire			
		4.5	12.5	15.8	37.5
100 mm Hole(U/G)	131.00	188	114	91	NR
Full Bore Rupture (U/G)		900	386	301	NR
20 mm Diameter Hole (A/G)	5.27	38	31	30	25



Pre-Emergency Planning

IRPA is the probability that a specific or hypothetical individual will be killed due to exposure to the hazards or activities during one year.

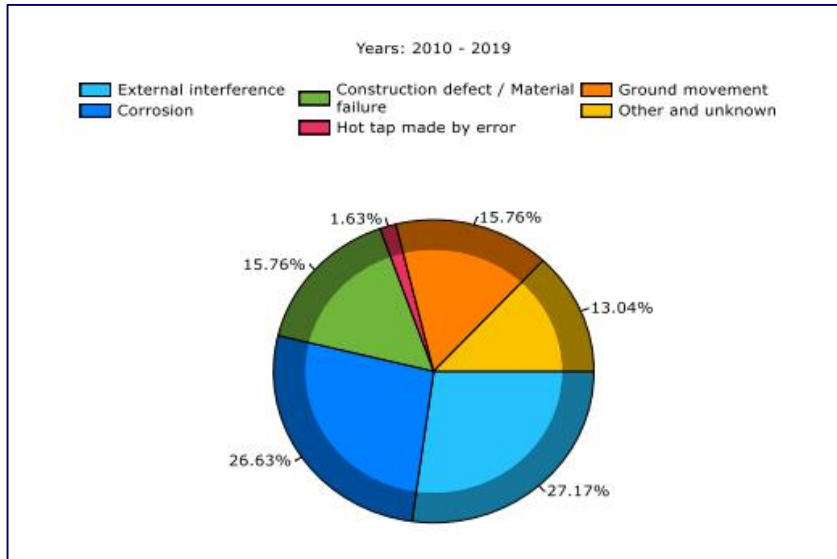


Emergency Preparedness Measures

- *To evaluate the thoroughness and effectiveness of an ERDMP, it is necessary to conduct periodic table top exercises full-scale or announced, and unannounced drills. Each site should hold drills on the night shifts, change shifts as well as during the day as mandated under regulation*
- *These exercises should attempt to simulate as closely as possible a fire, explosion, or toxic agent release and comparison of the prescribed time lines and the actual received.*
- *Accordingly, based on the Consequence Analysis and Classification of Incidents (Sub Regulations 6), we have develop Action Plan for each Scenario tor respond in case of emergency.*
- *Efforts should be made to check the emergency preparedness at remotest location of Pipeline.*



Societal Capability Buildings

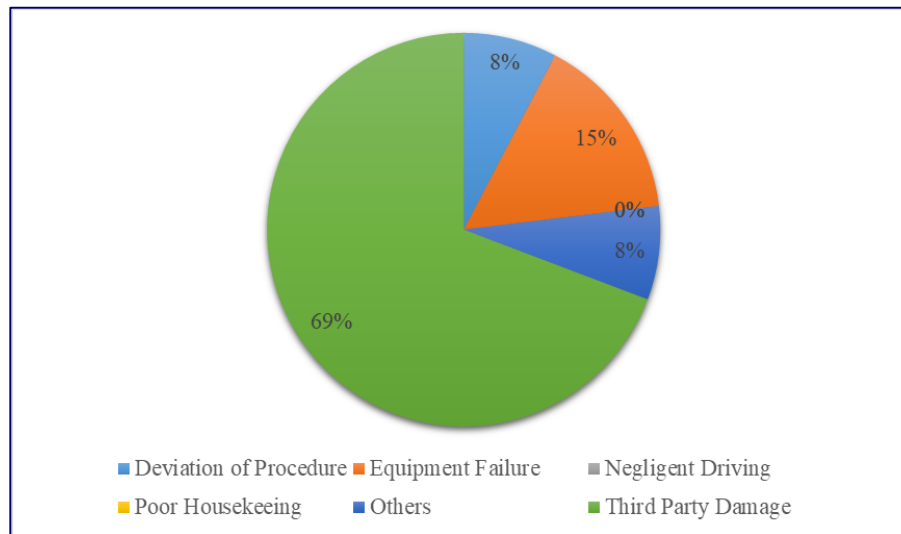


Resources: 11th EGIG Report

Detection	Incident distribution 1970 - 2019 [%]	Incident distribution 2010-2019 [%]
Public	34.6	16.8
Gas company	42.2	50.5
Unknown	6.7	0.5
Landowner	5.5	14.1
Distribution company	4.8	4.3
Other	6.2	13.6

Table 8: Detection of incidents

Resources: 11th EGIG Report



GAIL's Incident in NG Pipelines: Minor

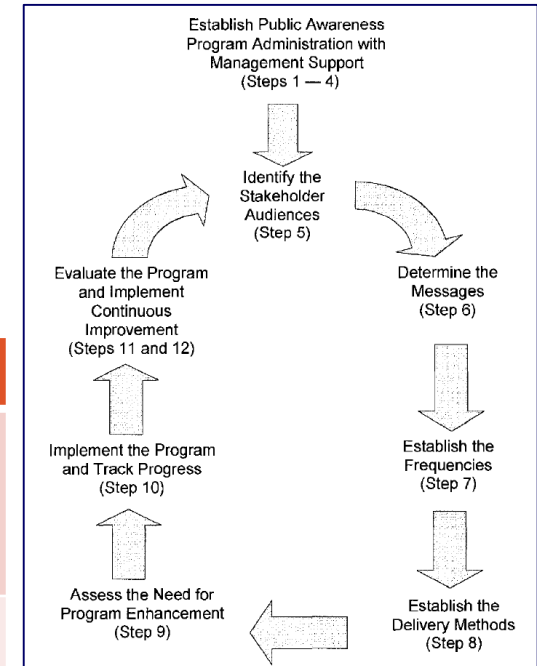
Societal Capability Buildings

- Awareness Programme for Surrounding Villagers along the Pipeline Route
- Public awareness through Radio Jingle/Video/Skit to aware about the Gas Pipelines and Safety of Pipeline
- Engagement of Villagers residing near the pipeline ROU
- Collaboration with Government Authorities on Management of Emergencies in Hydrocarbon Pipelines



Summary Public Awareness Communications

Stakeholder Audience	Delivery Frequency	Delivery Method and/or Media
Affected People: Residents located along transmission pipeline ROW and Places of Congregation	Baseline Frequency= 2Years	Targeted distribution of Print Material, Pipeline Markers, Personal Contact, Telephone Calls, Group Meetings etc.
Emergency Officials	Baseline Frequency= Annually	Personal Contacts or Targeted distribution of Print Material or Group Meetings etc., Emergency Tabletop, Exercises, Facility Tours etc.
Local Public Officials	Baseline Frequency= 3 Years	Personal Contacts, Targeted distribution of Print Material Videos/CDs etc.
Excavators/ Contractors	Baseline Frequency= Annually	Personal Contacts, Targeted distribution of Print Material, Group Meetings, Once Call Centre Outreach etc.



GAIL Initiatives

- GAIL has developed the Uniform Procedure for Organizing Emergency Preparedness Exercise at Pipeline Installations in accordance with ERDMP Regulations and Other Central/State Rules. Subsequently, attempt should be made to cover the entire Pipeline Installations in the span of 3-4 years.
- GAIL's Internal Operational and Safety Training Procedure has been revised in accordance with API 1162: Public Awareness Programs for Pipeline Operators to enhance the Community Awareness.
- Development of Uniform Template for Emergency Response and Disaster Management Plan for entire Pipelines, so as to make it informative and handy for users.

Thank You