Challenges in Establishing Effective Nuclear Security Culture

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- Nuclear Safety
- Evolution of Safety Regulations

- Malicious Elements
  - Acts of Terrorism
  - Thefts, Sabotage

- Nuclear Security
- Security Guidelines/Regulations

Essentials for Ensuring Effective Nuclear Security

- Adequate Physical Protection System
- Establishment and placement of Security Protocols
- Trained Management and Staff

Major no. of incidents due to human failures or inappropriate human behaviour

- *Nuclear Security Culture*

Different Nuclear Security Incidents

- Thefts, Losses
  - Strategic Materials
  - Radioactive sources
- Sabotage
  - Crippling operational systems
  - Keeping a radioactive source in harmful manner
  - Mixing radioactive material in drinking water

Many a times it may take time to detect. A few times may not result in any damage also.

Insider collusion can make the things worse

- Terrorist Attacks
  - Explosive attacks on facilities or tpt vehicles carrying nuclear materials
  - RED
  - RDD

Databases

- ITDB; since 1995; 2889 incidents during 1993-2015
- CNS; since 2013; 683 incidents during 2013-16

- Yearwise no. of incidents reg. thefts/losses, unauthorised possession or activity
- Large amounts of materials being produced and transported daily. No. of incidents reported seem to be a fraction of real value

- Treasure of information if systematically recorded, complete and accurate

- Challenge is to make the databases
  - comprehensive
  - meaningful

- Lethality of different materials, recoveries, info that no damage possible in some cases, accounting for decay, places from where no reporting possible- war torn areas

But still does not give idea on…….

Danger the world is facing

Database at a Nuclear Facility

Each Nuclear Facility should……..

- Systematically record all security related incidents
- Systematically investigate
- Implement corrective actions

- Make it available for integration at broader level
- Make it available to new staff so that no mistake gets repeated

Challenges in Effective NSC

- Expected more in developing countries

- In establishment
- But in maintenance also

Low General Security Culture

- Absence of nuclear or other strategic facilities
- Use of imported technology

- Recruitment of bulk of security staff local
- Prevalent Socio-economic factors
- Environment at home for staff, visitors, public around the facility
- Public awareness can prevent some incidents or their gravity
- Poverty – Easy prey to financial inducements
- Extra elaborate security arrangement which may become counterproductive

Commercially Unviable Facility

- Production target may become the only target
- Resource crunch
- Weakening of PPS
- Reduction in security staff or overburdened staff
- Training and retraining may suffer

Civil Unrest or Other Disturbances

- Abundance of malicious elements in society
- Greater probability of malicious attempts, inducements
- Result in more Spurious Calls
- Cannot afford to ignore any call

Varying Cultural Environment

- Communication gaps
- Different habits
- Chances of groupism & lesser team work
- Facing varying cultural environment especially during transportation

Non-Reporting and Maintenance of Database

- Reasons for Non-reporting
  - negligent approach to miss some incidents
  - not enough importance given
  - noticed much later and ignored
  - hiding mistakes
- Not able to learn from mistakes thus repeating mistakes

- *Maintaining systematic, honest and accurate database itself indicates good security culture*
- *Enables learning from mistakes, strengthening PPS, protocols, to prevent any mistake getting repeated*

Nuclear Security Damage Potential Index

- To continue to get attention from Policymakers on Nuclear Security , it is essential to represent risk by a number
- A number to represent level of cumulative danger potential at any point of time from the unrecovered fissile & nuclear material and radioactive sources in terms of causing damage to society (mortalities, morbidities, environmental damage in terms of areas becoming non-usable, decontamination costs etc.)
- Lethality of different materials, recoveries, info that no damage possible in some cases, accounting for decay, places from where no reporting possible
- Assigning appropriate value to different damages
- Nuclear Security Damage Potential Index

  = A number representing Sum Total of the Possible Damage

  which can be attributed to missing materials and sources

Concluding Remarks

- Avoid locating nuclear facilities in areas which are very much under developed
- Every facility should systematically maintain a comprehensive database with full investigation of each incident and actions taken to avoid any repeat of mistake and should also participate in the broader databases
- Need to evolve a “Nuclear Security Damage Potential Index” to indicate danger the world is facing due to “resultant” cumulative effect of various nuclear security incidents in the world

Thanks