

Integrated Emergency Management and the Prior Notification of the Transportation of Radioactive Material

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Abstract. Radioactive material is transported world-wide by various means. Each transport movement is heavily regulated and requires a high degree of emergency preparedness. If this preparedness is based upon the principles of Integrated Emergency Management then the States involved in the response to an incident should be in a position to respond no matter what the cause. The issue as to whether the State has, or has not, received prior notification of the movement should not affect the emergency preparedness or the response.

1. Introduction

The transportation of radioactive material, like that of many other dangerous goods, brings with it stringent safety measures and both national and international regulations [1].

It is recognised that there are hazards in any transport activity. While the safety arrangements for the transport of radioactive materials are extensive and the likelihood of an incident very small, detailed emergency arrangements are in place to deal with any identified eventuality. Indeed, the underlying aim of the various regulations and legislation is to reduce the likelihood of an incident occurring and to limit the effects to people, property and the environment should one occur [2].

In order to respond to a transport incident involving the radioactive material and to meet the aim and objectives of the various regulations, then governmental organisations, the consignor and the carrier all have responsibilities to discharge in respect of emergency preparedness and response [3].

Unfortunately, it would appear that some States might have misinterpreted the issue of preparedness as an obligation for prior notification by the consignor [4]. Furthermore, these States have expressed the opinion that in order to have appropriate emergency response plans in place to deal with incidents involving the transportation of radioactive material, then they must receive prior notification of all shipments. Finally, the same States argue that they should be permitted to exercise the right to stop shipments from entering their jurisdiction, on the grounds that their emergency plans may not be suitable and their personnel not adequately trained, to deal with an incident involving radioactive material [4].

So, is prior notification of the transportation of radioactive material vital to ensure that States are fully prepared for an emergency and how would the principles of Integrated Emergency Management (IEM) help?

2. Integrated Emergency Management

One of the most significant time periods for current emergency planners was known as the 'Decade of Disaster'. The late 1980's and early 1990's found Britain facing an unprecedented number of major technological and 'natural' emergencies [5]. These incidents ranged from fires and explosions to terrorism, transport and weather related incidents.

Since this spate of incidents and the subsequent reviews that inevitably followed, emergency planning and response in the United Kingdom (UK) has been based upon the nationally agreed principals of IEM [6].

The main principle of IEM is that emergency planning must be based upon the response to an incident and not the cause of the incident. Other key emergency planning stages include assessment, prevention, preparedness response and recovery.

Many of the concepts of IEM are embraced by the International Atomic Energy Agency in their Safety Guide on the Planning and Preparing for Emergency Response to Transport Accidents Involving Radioactive Material [3].

The aim of IEM highlights the development of flexible emergency plans that should enable organisations to deal effectively with an incident, whether foreseen or unforeseen. This aim is further emphasised by one of the main planning stages which defines preparedness as 'Preparation of plans to respond to known hazards as well as to unforeseen events' [6].

It is this generic style of emergency management that is covered in detail in the UK Emergency Planning Society Guidance Document 'Transportation of Dangerous Goods – The Emergency Response' [7].

The document eludes to the fact that there is no single model response to a transport incident and that every response will need to vary just as the nature and effects of the incident will vary. By adopting the principles of IEM and producing generic emergency response arrangements, then an organisation will be in a better position to deal with any transport related incident.

3. State Emergency Response Arrangements and IEM

If States do not have adequate plans in place to protect their people, property and environment from the results of a transport accident or the release of radioactive material, then one must question why? Surely the events of the 11th September, 2001 and more recently the 'Bali Bombing' [8] have focused the minds of all those entrusted with the vial role of emergency management. If this new threat of global terrorism did not make each and every State review and revise their emergency preparedness then one must ask what would?

In order to implement the principles of IEM into State emergency management arrangements, the following planning process is recommended. Following this structured approach would ensure that State is better placed to respond to any major incident:

- Assessment

An assessment should be made of the emergency planning hazards facing a State i.e. what would be the likelihood and consequence on any major incident occurring. A recent study of UK hazards produced a total of 192 ranging from animal disease to air shows and water treatment and war [9]. This assessment should also consider incidents that could occur in another State but result in transboundary consequences [2]. This stage of the process would cover ‘The Planning Basis’ of the IAEA safety guide [3].

- Prevention

The particular measures adopted which would seek to prevent an incident occurring or reduce the severity should one occur. This could include issues such as regulating the particular hazard and defining the safety and security measures to be adopted.

- Preparedness

The preparation of flexible, generic plans to deal with all types of incidents that could occur from those hazards identified during the above assessment stage. As previously mentioned, these plans should focus on the response to an incident rather than the cause i.e. the response to the collision of two trains should cover issues such as command and control, rescue and treatment of casualties, scenes of crime and media liaison.

Should the same scenario involve the transportation of radioactive material then similarly the plan should focus on the response using the same elements i.e. command and control, rescue and treatment of casualties and scenes of crime. The introduction of radioactive material however, would mean that the generic section of the emergency plan relating to radiological protection etc. should also be initiated. The fact that the incident occurs as a result of a transport incident rather than a deliberate, terrorist release of radioactive material in a busy shopping centre should not affect the emergency preparedness and the generic plan.

- Response

The initial response to an incident will normally be provided by the local civil emergency services using the emergency management arrangements produced during the above ‘preparedness’ planning stage.

- Recovery

This final phase includes the activities necessary in order to restore and rebuild the community in the aftermath of an incident. Further details are included in the UK Home Office guide [10].

4. Consignors and Carriers Emergency Response Arrangements and IEM

As the primary responsibility for ensuring preparedness for a given shipment of radioactive material rests with the consignor [3] then their emergency management arrangements should also utilise the principals of IEM.

An example of how a responsible consignor and carrier ensures that adequate emergency response arrangements are in place is that of British Nuclear Fuels Limited (BNFL) and the Pacific Nuclear Fuels Limited (PNTL) fleet.

All of their transport movements not only comply with external regulations i.e. the International Maritime Dangerous Goods (IMDG) Code [11], adopted by the International Maritime Organisation (IMO) but also with BNFL's internal environment, health, safety and quality standards. These internal management systems are subject to periodic audit by Lloyds Register Quality Assurance and the UK Government Department for Transport (DfT).

The radioactive material is transported in packages, which are inherently safe and have exceeded a series of technical criteria established by the IAEA Transport Regulations [1]. The PNTL fleet transports the packages; a total of four vessels awarded the highest classification for the transportation of Irradiation Nuclear Fuel (INF) [12]. The structure and subdivision of the vessels hull is designed to ensure that, should the vessel sustain damage, then it will remain afloat. Other safety features include the duplication of essential systems and equipment.

BNFL has established comprehensive emergency management arrangements to ensure that they may respond to any International Transport related incident. In line with the principles of IEM these procedures focus on the response to an incident rather than the cause. In addition to the documented and audited procedures their emergency preparedness includes a 24 hour, 365 day, rota system ensuring the availability of management, operational, media, engineering, health physics and licensing personnel. Arrangements also exist to ensure that a team of these personnel would be able to travel to the incident on a world-wide basis.

Any response team deployed to an incident would be supported by a dedicated Emergency Control Centre and a backup technical Operations Centre. This may also call upon emergency equipment resources which are held at strategic locations including Europe and Japan. In addition to physical equipment, contracts exist for the provision of salvage services, damage and stability data, resource and equipment information and a sunken vessel location system.

The provision of such emergency management arrangements ensures that the carrier is not reliant upon the assistance and the preparedness of the nearest State and therefore prior notification should not be an issue.

5. Conclusion

All States face the risk of some form of transport hazard in the same way that they are all at risk of the deliberate release of chemical, biological, radiological or nuclear material [13]. The use of IEM would ensure that States are able to respond to all major incidents no matter what the cause. Therefore, so long as those undertaking the assessment stage of the IEM process identified that there was a risk of both a radiological hazard and a transport hazard then the standard of emergency preparedness would not be dependant upon prior notification of the transportation of radioactive material.

6. Recommendations

It is recommended that States, consignors and carriers should consider basing their emergency management arrangements on the principles of IEM and that the assessment of hazards includes both transport and radioactive materials.

7. References

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