
ROLE OF THE EMERGENCY RESPONSE GUIDEBOOK (ERG) IN CATEGORIZING OFFSITE TRANSPORTATION OPERATIONAL EMERGENCIES

QUESTION: In planning for an offsite shipment of radioactive waste, we are reviewing DOE O 151.1C to determine its applicability in the event of a vehicle accident/incident. In using the definition for an Operational Emergency included in Chapter V and Attachment 2, Contractor Requirements Document (CRD), 11.a(2)(d)1, what is the “immediate/affected area” and what would cause first responders to initiate protective actions at locations beyond the “immediate/affected area”?

ANSWER: DOE O 151.1C defines Operational Emergencies (OEs), which are major abnormal events or conditions that require the response of the DOE emergency management system. Chapter V and Attachment 2 (CRD), 11 a. (2) (d) of the Order contain OEs related to various types of accidents or conditions involving offsite transportation emergencies. The first definition is related to any event that involves the offsite transport of hazardous materials, such as described in the question, as follows:

“(d) Offsite DOE Transportation Activities. The following events or conditions represent an actual or potential release of hazardous materials from a DOE/NNSA shipment.

- 1 Any accident/incident involving an offsite DOE/NNSA shipment containing hazardous materials that causes the initial responders to initiate protective actions at locations beyond the immediate/affected area.”

The second and third OEs involve accidents/incidents specifically related to Special Nuclear Material (SNM) and nuclear weapons or their components.

The Department of Transportation (DOT) *Emergency Response Guidebook (ERG), 2008*, provides general guidance for first responders upon arrival on the scene of a transportation accident/incident. First, the on-scene responders will “isolate” the surrounding area in all directions by establishing an Initial Isolation Zone. All persons in this Isolation Zone will be directed to move, in a crosswind direction, away from the spill to the Initial Isolation Distance specified in the ERG for the hazardous material at risk. This distance defines a circle (Initial Isolation Zone) within which persons may be exposed to dangerous concentrations upwind of the source and life threatening concentrations downwind of the source. The situation will then be assessed to determine the need to extend protective actions beyond the Initial Isolation Zone in order to protect the emergency responders and the public from harmful exposure to the hazard. If a decision is made to extend protective actions, then a Protective Action Zone is

established in the downwind direction to an initial Protective Action Distance specified in the ERG.

The following discussion is based on guidance contained in DOE G 151.1-4, Section 4.4.4 related to the categorization of Operational Emergencies. Initial on-scene response to any accident/incident involving offsite transportation of DOE/NNSA-owned hazardous materials will be carried out by State and local emergency services groups (e.g., police, fire, and HAZMAT) responsible for the accident locale. If local responders determine that protective actions are necessary beyond the immediate/affected event scene the event is to be categorized as an OE by the DOE/NNSA entity responsible for the shipment (usually the shipper).

Generally, only two indicators from the scene are needed to support an OE declaration:

- On-scene responders (the responsible local authorities) have implemented either evacuation or shelter as protective actions in response to the accident/incident; and
- The area within which protective actions have been implemented extends more than about 100 meters in any direction from the vehicle or spill location.

The “about 100 m” distance was chosen to define the “immediate/affected area” based on use of a similar distance to define the lower bound of the Site Area Emergency class for fixed facilities, which corresponds to hazardous material impacts outside the immediate vicinity of the release. Establishment by local responders of either an Initial Isolation Zone or a Protective Action Zone that extends beyond about 100 m from the vehicle or spill location suggests an event with hazardous material impacts of about the same magnitude.

The decision to categorize an event will be based on the specific information from the event scene that is available to the DOE entity responsible for categorization. If the actual distance to which protective actions are being implemented is known, then the 100 m criterion can be applied. If it is known that a Protective Action Zone has been established in accordance with the ERG, it should be assumed that the 100 m criterion has been or may be exceeded.

In summary, the DOE entity responsible for categorization should declare an OE if:

- It is confirmed that on-scene responders have established an Initial Isolation Zone that extends beyond about 100 m from the vehicle or spill location; or
- A Protective Action Zone has been established in the downwind direction as specified in the ERG.