

DRAFT INTERIM USE
REP EXERCISE PREPARATION GUIDE
(For Evaluator Pre-exercise Use Only – Do Not Submit!)

EVALUATION AREA 2 - PROTECTIVE ACTION DECISION-MAKING

SUB-ELEMENT 2.a - Emergency Worker Exposure Control

Criterion 2.a.1 - OROs use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of KI, is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides.

According to the ORO's plan/procedures and the extent of play agreement:

- Who will authorize exposure levels to emergency workers in excess of pre-authorized levels?
- What approach has been used to correct DRD readings to the correct Total Effective Dose Equivalent (TEDE) (e.g., the dosimeter correction factor)?
- Who makes the decision to authorize KI (for emergency workers, institutionalized, etc.) to be taken?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Observe whether decision-makers considered projected doses and likely exposure rate patterns before dispatching workers into the Emergency Planning Zone (EPZ).
- Note whether the decision-makers considered:
 - Alternate entry and exit routes,
 - Potential changes in meteorological conditions,
 - Areas or roads to be avoided,
 - What to do in the event of equipment and vehicle failure, and
 - Previous exposure(s) of personnel.
- Note whether the decision to use KI was based on projected thyroid dose compared with the established Protective Action Guides (PAGs) for KI administration.
- Note if the KI decision-making process involved close coordination among assessment and decision-making staff.
- Document that the correct dosimeter correction factor was used.

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**SUB-ELEMENT 2.b – Radiological Assessment and Protective Action
Recommendations and Decisions for the Plume Phase of the Emergency**

Criterion 2.b.1 - Appropriate protective action recommendations are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions.

According to the ORO's plan/procedures and the extent of play agreement:

- Who (identify by title and organization) develops Protective Action Recommendations (PARs)?
- Are PARs based on dose projections?
- Does the ORO develop or independently validate dose projections?
- Does the ORO calculate projected dose, including quantities and units that are the same as the PAGs to which they will be compared?
- Who (identify by title and organization) transmits PARs to decision-makers?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Note whether PARs were developed based on, for example:
 - Information/recommendations from the licensee (plant),
 - Field monitoring data,
 - Release data, and/or
 - Meteorological data.
- Note whether differences in dose projection greater than a factor of ten were discussed with the licensee. If so, were the differences resolved and considered in the PAR?
- Observe whether changes were made to the PARs. If so, note times of the changes and document on what basis changes were made (e.g., field monitoring data, exposure rates, release data, meteorological data).
- Observe whether the plume location was plotted on a map on the basis of monitoring data received by the ORO.
- Note if the PARs were coordinated with other political jurisdictions (e.g., other affected OROs).

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**SUB-ELEMENT 2.b – Radiological Assessment and Protective Action
Recommendations and Decisions for the Plume Phase of the Emergency**

Criterion 2.b.2 - A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PAD) for the general public (including the recommendation for the use of KI, if ORO policy).

According to the ORO's plan/procedures and the extent of play agreement:

- Who (identify by title and organization) makes Protective Action Decisions?
- Is the use of KI for the general public specified? If so, who makes this decision?
- How is the general public notified to ingest KI, if applicable?
- Do PADs need to be coordinated with other jurisdictions?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Note whether initial PADs are made based on:
 - Notification from the licensee,
 - Assessment of plant conditions and/or radiological releases, or
 - PARs from the utility and ORO staff (dose assessment group).
- Note whether the subsequent PADs are made based on:
 - Subsequent dose projections,
 - Field monitoring data, or
 - Information on plant conditions.
- Evaluate the decision-maker(s) capability to change protective actions as appropriate based on new information.
- Follow the KI decision-making process. Did the decision require coordination with assessment and decision-making staff and was it based on projected thyroid dose compared with the established PAG.
- Note how KI information was provided to those who needed to take it. Evaluate message content for timeliness and clarity on KI instructions.

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SUB-ELEMENT 2.c – Protective Action Decisions for the Protection of Special Populations

Criterion 2.c.1 - Protective action decisions are made, as appropriate, for special population groups.

SPECIAL POPULATIONS include: hospitals, nursing homes, correctional facilities, schools, licensed day care centers, mobility impaired¹ and special needs individuals, hearing impaired individuals, and transportation dependent individuals.

According to the ORO's plan/procedures and the extent of play agreement:

- Are the special populations considered part of the general population or are protective action decisions made for any special populations only?
- Who (identify by title and organization) will make the protective action decision for special populations?
- What factors will be considered when making protective action decisions for special populations?
- What types of special needs facilities are within the affected area for your evaluation location?
- What types of special populations are in the affected area of the EPZ for your evaluation location?
- Review scenario material; identify what areas will be affected by the plume?
- What types of protective actions do the plans/procedures indicate could be decided for special populations?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Note what PADs are made for special populations, including schools, e.g.:
 - Evacuation,
 - Shelter-in-Place,
 - Administration of KI.
 - Precautionary Evacuations.
- Note the time of the protective action decision (or precautionary protective action decision), its implementation, and who made it.

¹ Mobility impaired are those individuals who are non-ambulatory and/or require support (e.g., crutches).

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- If there was a delay in making the decision, document what the delay was.
- Note the organization/title of the individual who makes the PADs for special populations.
- Note whether decisions for school children were based on:
 - ORO recommendation,
 - ECL at time of notification,
 - School plans,
 - Location of students, and/or
 - Time of day.
- Note the basis of the PADs for other special populations, e.g.:
 - Emergency Classification Level (ECL)
 - Weather conditions,
 - Shelter availability,
 - Availability of transportation assets
 - Availability of alternate locations for special populations,
 - Risk of evacuation vs. risk from avoided dose.

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SUB-ELEMENT 2.d – Radiological Assessment and Decision-Making for the Ingestion Exposure Pathway

Criterion 2.d.1 - Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO's planning criteria.

According to the ORO's plan/procedures and the extent of play agreement:

- Who (identify by title and organization) has the authority to make decisions in the ingestion exposure pathway?
- Are the decision makers and the dose assessment staff located in the same facility? If not, arrange with another evaluator so that both parts of the criterion can be observed (and ensure that the Team Leader is aware of the arrangement).
- What precautionary actions are considered before any analytical result is available on contamination levels in food or water? When, and on what basis are decisions made to implement precautionary actions?
- How are the boundaries of any temporary embargo zones determined, if this approach is contemplated?
- What laboratory provides testing for radionuclide concentrations in edible food or water?
- Does the dose assessment staff compare analytical results with pre-determined Derived Intervention Levels (DILs) or are dose projections made based on the analytical results? If the latter, what assumptions are made with respect to; fraction of the diet assumed to be contaminated, quantity consumed, consumption period, dose conversion factors, and decay corrections.
- Are the pre-determined DILs the same as the 1998 Food and Drug Administration (FDA) DILs? If not what are the differences?
- What projected dose or doses are used to decide if protective actions are warranted? If other than the FDA PAGs (DILs as a surrogate) are used, what rationale is given for other decision criteria?
- What are the options described for potential protective actions in the ingestion exposure pathway?
- What arrangements are made to coordinate potential decisions with other political jurisdictions, if necessary?
- What is the appropriate coordination between decision makers, if more than one individual has jurisdiction?

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- Are representatives from Nuclear Insurers going to play in the exercise and address compensation for loss of goods?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Note times for all decisions including precautionary actions.
- Observe all coordination activities between decision makers and technical staff.
- Obtain copies of all;
 - Laboratory data input (real or controller injected)
 - Calculations
 - Maps or descriptions of impacted areas
 - Formal recommendations made to decision makers

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SUB-ELEMENT 2.e – Radiological Assessment and Decision-Making Concerning Relocation, Re-entry and Return

Criterion 2.e.1 - Timely relocation, re-entry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the ORO's plan and/or procedures.

For Relocation

According to the ORO's plan/procedures and the extent of play agreement:

- Is there a description of a procedure to estimate integrated dose in contaminated areas and compare it to the PAGs?
- Is there a description of how areas to be restricted are determined based on the following factors:
 - the mix of radionuclides in deposited materials,
 - calculated exposure rates vs. the PAGs, and
 - field samples of vegetation and soil analyses?
- Does the plan use the optional approach (230 µR/hr) to determine the restricted area boundary?
- Is there provision to relocate those who reside in areas where the projected dose is in excess of relocation PAGs?
- Is there a procedure to control access to evacuated and restricted areas and what agencies have that responsibility?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Document how the ORO determined the area(s) to be restricted.
- Note what the ORO does to control access to restricted areas.

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For Re-entry

According to the ORO's plan/procedures and the extent of play agreement:

- Is there a description of how to develop a coordinated strategy for authorized re-entry of individuals to the restricted zone? In this description, is consideration given to:
 - Established exposure limits,
 - Maintenance of essential services (e.g., fire protection, utilities),
 - Security needs (e.g., police patrols),
 - Maintenance of property (e.g., care for farm animals), and
 - Retrieval of important possessions?
- Is there a procedure for controlling the exposure of workers and members of the general public who temporarily re-enter the restricted zone(s)?
- Does the procedure for exposure control include:
 - Provisions for direct-reading dosimeters and non direct-reading dosimeters to individuals and/or their escorts entering the restricted zone,
 - Ascertaining where workers and members of the public are going, why and for how long,
 - Provision of maps and plots of radiation exposure rates, and
 - Advising workers and members of the public on which areas to avoid?
- Is there a description of how to develop exit procedures, including:
 - Monitoring of individuals, vehicles and equipment,
 - Decision criteria for decontamination, and
 - Disposition of dosimeters and maintenance of the re-entry radiation exposure records of workers and members of the public who re-entered.

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Note the exposure limits, including the time period over which the dose would accumulate.
- Document how the ORO determined who should be allowed to re-enter the restricted zone, and what provisions were made to determine and control their exposure. Where and to whom were dosimeters and exposure record cards to be turned in?
- Document how the ORO provided for exit from the restricted area, including monitoring of persons, vehicles and equipment.

For Return

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According to the ORO's plan/procedures and the extent of play agreement:

- Is it indicated that return is permitted to the boundary of the restricted area(s) based on:
 - The relocation PAG,
 - Changing conditions (e.g., cancellation of the ECL, relaxation of restrictive measures, change in measurements of radiation from ground deposition), and/or
 - Restoration of services and facilities (e.g., medical and social services, utilities, roads, and schools)?

During the exercise, in addition to evaluating activities related to the items listed above, be sure to:

- Note what the decision to allow people to return to the boundaries of the restricted area was based on.
- Note if implementation of the decision was supported by restoration of services and facilities, such as:
 - Decontamination of hot spots, if necessary,
 - Utilities,
 - Food stores and restaurants reopened,
 - Hospitals restaffed and reopened, and
 - Schools reopened.
- Is there a procedure for providing medical and social assistance for relocated individuals?