

Radiation Dose Limits for Emergency Workers

Emergency Worker Dose Limits

Administrative dose limits for emergency workers are as follows:

Response Activity	Dose Limit
Standard response	5 Rem (5,000 mRem)
Protection of critical infrastructure/key resources	10 Rem (10,000 mRem)
Lifesaving or protection of large populations	25 Rem (25,000 mRem)

Emergency Worker Turn-Back Limits

Turn-back limits are determined based on readings on a direct reading dosimeter:

Response Activity	Turn-Back Limit
Standard response	1 R (1,000 mR)
Protection of critical infrastructure/key resources	2 R (2,000 mR)
Lifesaving or protection of large populations*	5 R (5,000 mR)

*Hostile action response activities are considered lifesaving and protection of large populations.

Emergency Worker Withdraw Limit

Field team emergency workers will withdraw immediately upon registering a dose rate at or above 100 mR/hr gamma.

Emergency Worker Contamination Levels

- In the field, emergency workers will change personnel protective equipment (PPE) when they reach 1,000 counts per minute (CPM) above background.
- For an emergency worker to return home, or for equipment to return to service, contamination levels must be below 300 CPM above background.

Evacuation and Shelter-in-Place Protective Action Guideline (PAG)

The table below lists the projected dose at which a protective action decision to evacuate or shelter in place will be made and publicly broadcast:

EPA Evacuation PAG	1-5 Rem (1,000 – 5,000 mRem)
Minnesota Evacuation PAG initiated	1 Rem (1,000 mRem)

EPA Relocation Protective Action Guidelines

Populations in areas where dose levels exceed PAGs will be relocated:

Time Period	Dose Limit
First year	2 Rem TED or higher
Any subsequent year	0.5 Rem TED or higher

Returning to these areas is allowable if lab analysis indicates dose levels will not exceed the PAG for the corresponding time period.

Minnesota Initial Re-Entry Standard

Soon after a radiological release, it can be anticipated that people will request re-entry into areas that have been evacuated, or from identified relocation areas.

Life safety, critical infrastructure, and stabilization operations will be given the highest priority.

Because it will be difficult to determine safe re-entry stay times early in an incident when field and mapping data is at a minimum, Minnesota will use the following conservative standard:

Outside Projected Plume & Upwind	Inside Projected Plume & Downwind
Eight-hour stay time, or 1R (dosimeter reading) turn-back	100 mR/hr (meter reading) or 1R (dosimeter reading) turn-back

For both cases:

- Dosimetry, PPE, and a pre-deployment briefing are required.
- KI tablets are available and recommended.
- Dosimetry readings should be reported every 60 minutes.

- Withdrawal may be ordered if re-suspension is indicated or change in meteorological conditions warrant.
- Monitoring and decontamination will be available upon exit.
- No immediate re-entry will be allowed within a 2-mile radius without radiological monitoring equipment.

Each request will be considered on a case-by-case basis, with greater flexibility allowed to those carrying radiological monitoring equipment and performing high-priority tasks.

This initial standard will be updated more precisely as field sampling continues and the extent and level of contamination are better described.

Sustained Re-Entry

More refined protocols and stay-time calculations will be provided by the SEOC to the counties as more detailed contamination monitoring, sampling and analysis is completed.

Re-entry into a restricted zone (validated by monitoring and sampling) may be permitted for essential purposes. Persons entering may be escorted and will have projected stay times based on actual contamination levels. The standard for sustained re-entry is listed in the table below.