

## **Occupational Safety and Health, SOG 245**

### **REHABILITATION**

1. Scope. This standard applies to all emergency operations and training exercises where strenuous physical activity or exposure to heat or cold creates the need for the rehabilitation of personnel. It was promulgated to:
  - A. Prevent injuries, illnesses, and deaths that may result from excessive fatigue.
  - B. Establish procedures for medical evaluation and treatment, food and fluid replenishment, and relief from extreme climatic conditions during emergency operations and prolonged training exercises.
2. Definitions.
  - A. Level I rehabilitation: Situations of short duration. The incident commander may elect to use the rehabilitation supplies from and apparatus on the scene or may special-call the rehab unit to the scene. Typically in Level I rehab, the crews are not rotated and the incident or training exercise has a limited duration.
  - B. Level II rehabilitation: Situations that require a major time and personnel commitment. Examples include a major fire or a lengthy training exercise in which the firefighter's health and safety must be addressed.
3. General.
  - A. The incident commander shall evaluate the circumstances at each incident and shall make early and adequate provisions for the rest and rehab of all members working at the scene. These provisions include:
    - (1) Medical evaluation.
    - (2) Treatment and monitoring.
    - (3) Food and fluid replenishment.
    - (4) Mental rest.
    - (5) Relief from extreme climatic conditions and other environmental factors present at the incident.

- B. During prolonged incidents, strenuous training sessions, and periods of extreme heat or cold, the incident commander shall request that the rehab unit be dispatched to the scene and shall appoint a rehab officer (EMS) to manage the rehabilitation of the firefighter(s).
  - C. The Rehab Log shall be completed by the rehab officer at all Level II incidents. The log shall be submitted to the safety officer to be attached to the incident report, and it shall be included as part of the incident postmortem. Level II rehab includes the provision of EMS at the Basic Life Support ("BLS") level in the rehab sector.
4. Rehabilitation Sector.
- A. The Safety Officer shall establish a rehabilitation sector when conditions indicate that members working at an incident or training exercise require rest and rehab.
  - B. The safety officer shall appoint a rehab officer who will assume responsibility of the rehabilitation sector. At most incidents, the incident commander will designate the location of the rehabilitation sector. However, if the incident commander has not designated a rehab site prior to the appointment of a rehab officer, the safety officer shall promptly select an appropriate location based on the most desirable site available.
  - C. The rehab sector should be placed in a location that allows members to physically and mentally rest and recuperate from the stress, pressure, and demands of the emergency operation or training evolution.
  - D. The rehab sector should also be located far enough away from the incident scene to allow members to safely remove their protective clothing and SCBA.
  - E. If the rehab sector is located outdoors, the area should be free of ants and other stinging or biting insects.
  - F. Members in the rehab sector should not be exposed to exhaust fumes from apparatus, vehicles, and motorized equipment, including those involved in the rehabilitation sector operations.

- G. The rehab sector should be large enough to accommodate multiple crews and should allow for expansion or contraction as the size of the incident varies.
- H. The rehab sector should be easily accessible by EMS units and other support vehicles.
- I. The rehab sector should be located close enough to the incident to allow members to promptly reenter the emergency operation site after recuperation.
- J. The following areas should be considered when selecting a site for the rehab sector:
  - (1) A nearby garage, building lobby, or other structure.
  - (2) At least two floors below a fire in a high-rise building.
  - (3) A large climate-controlled vehicle such as a school or transit bus.
  - (4) Fire apparatus, ambulances, or other emergency vehicles at the scene or called to the scene.
  - (5) The fire department rehab unit.
  - (6) An open area in which a rehab site can be created by using tarps, fans, etc.
  - (7) At an industrial site, the rehab sector shall be placed outside the fenced compound area.
- K. The rehab officer shall secure all the resources required to adequately staff and supply the rehab sector. The supplies may include the items listed below:
  - (1) Fluids such as water, activity beverage, Gatorade, and ice.
  - (2) Food such as soup, broth, or stew in hot\cold cups.
  - (3) Medical equipment such as blood pressure cuffs, stethoscopes, oxygen administration devices, cardiac monitors, intravenous

solutions, and thermometers. (Medical supplies may be furnished by the ambulance assigned to the rehabilitation sector.)

- (4) Other items such as awnings, fans, tarps, smoke ejectors, heaters, dry clothing, extra equipment, floodlights, towels, traffic cones and fireline tape (to identify the entrance and exit of the rehabilitation area).

## 5. Guidelines.

- A. The establishment of a rehab sector shall be considered during the initial planning stages of an emergency response. The climatic or environmental conditions of the emergency scene should not be the sole justification for establishing a rehab sector. Any activity or incident, whether emergency or nonemergency, that is large in size, long in duration, and labor intensive will rapidly deplete the energy and strength of personnel.
- B. Climatic or environmental conditions that indicate the need to establish a rehabilitation sector include a heat index above 85°F or a wind-chill index below 30°F.
- C. A critical factor in the prevention of heat stress injury is the intake of water and electrolytes during periods of intense physical activity.
  - (1) During these periods, an individual should drink at least one quart of water or Gatorade per hour.
  - (2) Adequate fluid intake is important even during cold weather operations. Despite outside temperatures, heat stress injuries may occur during firefighting or other strenuous activity any time that protective clothing and equipment are worn.
  - (3) Individuals should avoid caffeinated and carbonated beverages because both interfere with the body's water conservation mechanisms.
  - (4) Certain drugs also impair the body's ability to sweat. Use caution if a member has taken antihistamines, diuretics, or stimulants.
- D. If the duration of an incident extends through regular mealtimes, the department shall provide food to the members at the scene whenever it is possible to do so. Food may be charged to the department at certain stores.

The department may also have a canteen or use the Red Cross, Salvation Army, or local auxiliary group.

- E. Forty-five minutes of work time is generally recommended as an acceptable length of work prior to mandatory rehabilitation.
  - (1) Members having worked through two full 30-minute-rated SCBA cylinders, or for 45 minutes, shall be rotated to the rehabilitation sector for rest and evaluation.
  - (2) In all cases, an objective evaluation of a member's fatigue level is the appropriate criterion for determining if rest is required. Rest periods for members in the rehab sector shall be at least 10 minutes or greater.
  - (3) Fresh crews from the staging sector should replace crews sent to the rehab sector. Crews released from the rehab sector should be rotated to the staging sector prior to returning to work. This procedure ensures that fatigued individuals do not return to work before they are rehabilitated.
  
- F. Members should not be removed from a hot environment and placed directly into an air-conditioned environment because the body's cooling system may shut down in response to the external cooling. An air-conditioned environment is acceptable only after a cool-down period at ambient temperature with sufficient air movement.
  
- G. EMS at the advanced life support level will be provided at each incident. EMS personnel will evaluate the vital signs and the physical condition of members as they are rotated through the rehab sector.
  - (1) The safety officer and EMS personnel will determine whether a member will be allowed to return to work, remain in rehab, or receive further medical treatment and be transported to a medical facility for further evaluation.
  - (2) Continued rehabilitation consists of the ongoing monitoring of vital signs, rest, and fluid intake. Medical treatment for a member whose signs and symptoms indicate potential problems will be provided in accordance with local medical control procedures. EMS personnel will be aggressive in determining that potential medical problems exist.

- H. When working crews arrive at the rehab sector, each member's vital signs shall be taken and recorded. The following criteria are used in the evaluation of fireground personnel during a fire or rescue incident:
- (1) Transportation to the hospital is required when the diastolic blood pressure is  $>110$ .
  - (2) Transportation to the hospital is also required when the diastolic blood pressure is  $>100$  and the individual is symptomatic.
  - (3) An individual may be transported to the hospital for further evaluation when the diastolic blood pressure is  $< 110$  and the individual is symptomatic.
  - (4) The individual may be transported when the systolic blood pressure is  $> 200$  and after further evaluation and rest the systolic blood pressure is still  $> 200$ .
  - (5) When a pulse rate of  $> 140$  is found, administer oxygen and fluids, rest for a minimum of 10 minutes, and reassess the individual. If the heart rate is less than 140, the individual may return to work.
  - (6) If after 10 minutes the heart rate still remains above 140, the individual must rest for an additional 30 minutes. Administer fluids and oxygen, and record the heart rate and rhythm on a cardiac monitor and obtain an EKG printout.
  - (7) If after 30 minutes the pulse rate remains above 140, transport the member to a medical facility for further evaluation.
  - (8) In the above cases, Medical Control will be contacted in every situation and treatment or transport will be determined in conjunction with Medical Control.
- I. All medical evaluations shall be properly recorded by the EMS, along with the individual's name and chief complaints. The form must list the date, time, and incident number and be signed by the rehab officer.
- J. Members sent to rehab shall enter and exit the rehab sector as a crew. The crew designation, number of crew members, and times of entry to and exit

from the rehab sector shall be documented by the rehab officer. Crews shall not leave the rehab sector until released by the rehab officer.

6. Responsibilities.

- A. All officers shall monitor the condition of each member working under their command and shall ensure that adequate steps are taken to provide for each member's safety and health. The incident command system is to be used to request that a crew be relieved and for the reassignment of fatigued crews.
- B. During periods of hot weather, members are encouraged to drink water or Gatorade throughout the workday. During any emergency incident or training evolution, all members shall advise an officer when they believe their level of fatigue or exposure to heat or cold is approaching a point that could affect them, their crew, or the operation in which they are involved. Each member shall also monitor the health and safety of the other members of his crew.

7. Heat Stress Index.

<b>Temperature °F</b>	<b>Danger</b>	<b>Injury Threat Category</b>
Below 80°F	None	Little or no danger under normal circumstances
80°F-90°F	Caution	Fatigue possible if exposure is prolonged and there is physical activity
90°F-105°F	High	Heat cramps and heat exhaustion possible if exposure is prolonged and there is physical activity
105°F-130°F	Extreme	Heat cramps or exhaustion likely, heat stroke possible if exposure is prolonged and there is physical activity
Above 130°F	Mortal	Heat stroke imminent!

Add 10°F when protective clothing is worn and add 10°F when in direct sunlight.

8. Wind Chill Index

<b>Wind chill temperature (°F)</b>	<b>Danger</b>
Above 25°F	Little danger for properly clothed person
25°F to -75°F	Increasing danger, flesh may freeze
Below -75°F	Great danger, flesh may freeze in 30 seconds