
Unit 10: Operations and General Health and Welfare

STUDENT GUIDE

Objectives

By the end of this unit, students will be able to:

- Identify unsafe actions and situations potentially undertaken by incident personnel while working at the incident site, how to prevent those safety risks, and how to stop unsafe operations
- Describe the methods used by the Safety Officer to promote the general health and welfare of incident personnel
- List ways of ensuring that the work and rest guidelines are followed
- Given examples of unsafe aviation situations, describe corrective actions and who the Safety Officer should contact
- List areas of concern for the Safety Officer while in the field
- Describe the Safety Officer's authority to stop or prevent an unsafe act

Methodology

This unit uses lecture, handouts, and discussion.

Content from this unit will be tested through the Final Exam.

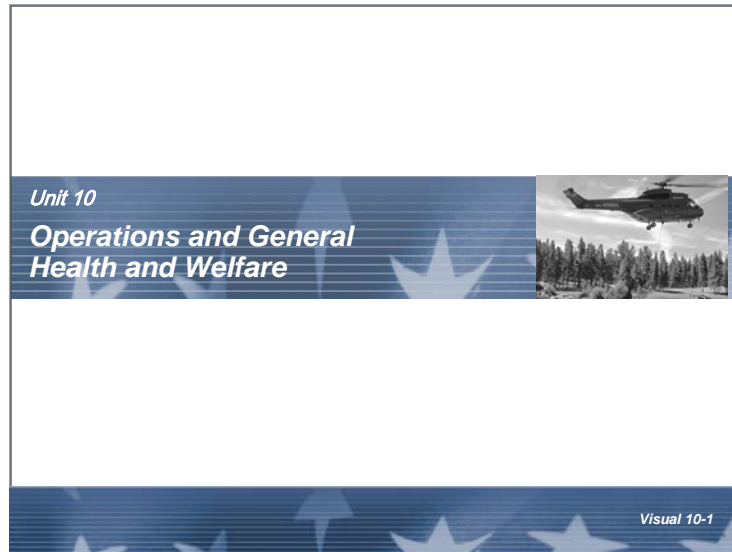
Time Plan

A suggested time plan for this unit is shown below. More or less time may be required based on the experience level of the group.

Topic	Time
Lesson	3 hours
Total Time	3 hours

Topic

Unit Title Slide

**Key Points**

S c o p e S t a t e m e n t

Through this unit, students will gain a general understanding of the interactions between the Safety Officer and the Operations Branch, as well as the general health and welfare issues of incident personnel. Students will explore the types of safety and welfare issues that can arise in incident operations, especially work and rest guidelines. The unit also includes a discussion of the types of unsafe actions that may occur at an incident site, and students will learn how to identify, prevent, or intervene to stop unsafe operations.

Topic Unit Objectives

Unit Terminal Objective

Identify unsafe situations and actions taken by incident personnel, how to prevent those safety risks, and how to stop unsafe operations.

**Key Points**

Unit Terminal Objective

Identify unsafe situations and actions taken by incident personnel, how to prevent those safety risks, and how to stop unsafe operations.

Unit Enabling Objectives

- Describe the methods used by the Safety Officer to promote the general health and welfare of incident personnel
- List ways of ensuring that the work and rest guidelines are followed
- Given examples of unsafe aviation situations, describe corrective actions and who the Safety Officer should contact
- List areas of concern for the Safety Officer while in the field
- Describe the Safety Officer's authority to stop or prevent an unsafe act

Topic Unit Overview

Unit Overview

Monitoring:

- Personal protective equipment (PPE)
- Work and rest guidelines
- Air Operations
- Equipment and personnel safety
- Tools
- Atmospheric and environmental sampling

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Visual 10-3

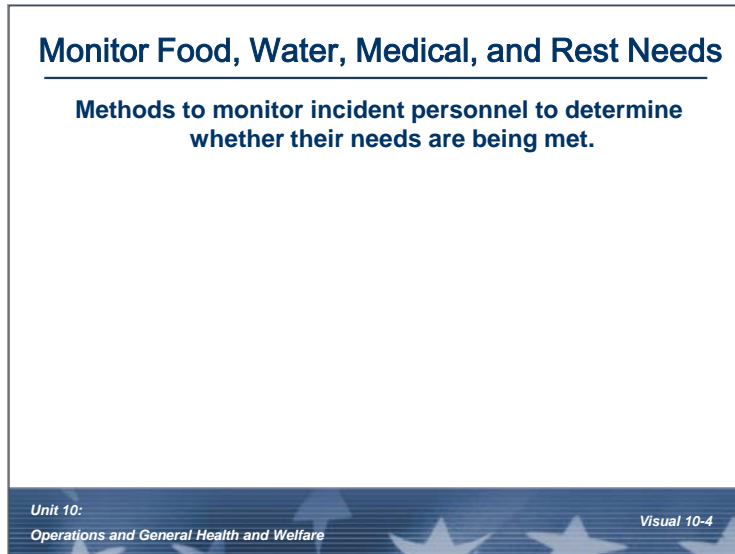
Key Points

This unit covers many of the issues that the Safety Officer should monitor while observing incident operations:

- Personal protective equipment (PPE)
- Work and rest guidelines
- Air Operations
- Equipment and personnel safety
- Tools
- Atmospheric and environmental sampling

This unit should be not viewed as a checklist or a comprehensive discussion, but rather a sampling of the types of safety issues that may occur.

Topic Monitor Food, Water, Medical, and Rest Needs



Key Points

The Safety Officer should ensure that all personnel needs are being met.

The methods for doing this are the same as the methods for gathering information about the incident at your initial deployment:

- Listen to incident personnel
- Review time reports and timesheets
 - Crews will push themselves if they aren't stopped, or they may be pushed because a life is at stake
 - If they have been working 20-hour days, they are a safety hazard and need to be ordered to rest

Topic Inclement Weather

Inclement Weather



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Visual 10-5

Key Points

There are many places in the country where you can go from a warm, sunny day to a snowstorm the next day. The Safety Officer needs to make sure that incident personnel have and are using appropriate clothing and facilities for the weather.

The Safety Officer should help Unit Leaders and Supervisors anticipate what weather changes mean for the health and safety of their crews.

Topic Monitor Incident PPE

Monitor Incident PPE

- **Ensure that PPE is compatible with assignment hazard and risk**
- **Visually check that team members have and are using the required PPE**

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Visual 10-6

Key Points

The Safety Officer must ensure that the level of PPE is compatible with the assignment. This is achieved by consulting with the Operations Section and relevant experts.

The Safety Officer should also ensure that PPE is in good working order. This means that it must be inspected. The more hazardous the situation, the more thorough the testing needs to be.

The Safety Officer should visually check team members. Look out for the use of PPE. It is not enough to make sure that crews leave the base with a helmet; they have to be wearing the helmet when working. If the Safety Officer sees a problem:

- In a situation that is not life-threatening, the Safety Officer should go to the Supervisor and explain what is wrong and how to take corrective action
- The Safety Officer should not go directly to the crews because this would undermine their leader
- In a situation that is life-threatening, the Safety Officer should directly intervene (more on interventions later in this unit)
- When personnel are doing things correctly, the Safety Officer should let them know and encourage them to continue being safe

Topic Required Personal Protective Equipment

Required Personal Protective Equipment



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Visual 10-7

Key Points

The required PPE depends on the jurisdiction or agency regulations, as well as the situation. The role of the Safety Officer is to make sure that all crews have at least what is prescribed.

The Safety Officer informs personnel about the PPE that they need on ICS Form 204, Assignment List, and at specific briefings as Division Supervisors and Team Leaders brief their teams.

Topic

Required Personal Protective Equipment (cont.)

Required Personal Protective Equipment (cont.)



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Visual 10-8

Key Points

TopicPPE Compatible With Assignment

PPE Compatible With Assignment

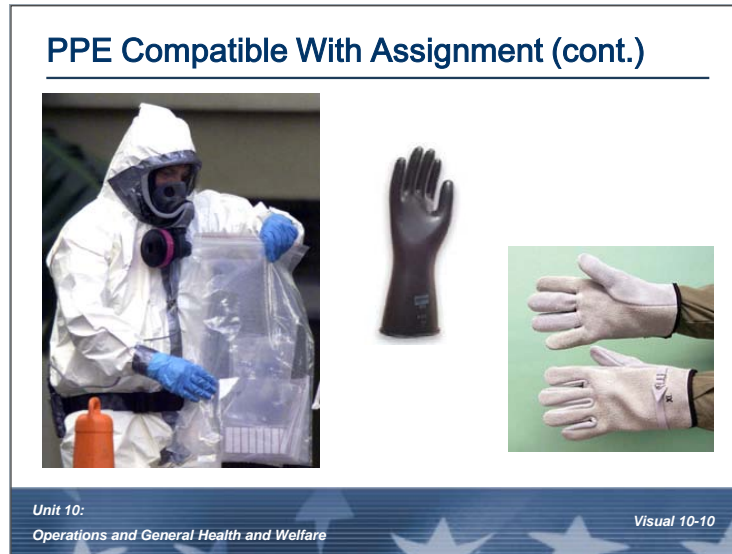


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Visual 10-9

Key Points

It appears that the level of PPE exhibited in this picture might be excessive.

Topic PPE Compatible With Assignment (cont.)**Key Points**

In a wide disaster area or a major incident, there may be many types of hazards. This will require several types of PPE to be available for personnel.

With regard PPE such as gloves, there are a number of different types, and personnel must wear the right type. An Assistant Safety Officer who is monitoring certain types of activities should carry an extra pair of the correct type of gloves or goggles.

Topic Monitor Incident PPE (cont.)

Monitor Incident PPE (cont.)

All personnel will be supplied Personal Protective Equipment and trained in its use prior to being assigned to the incident.

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Visual 10-11

Key Points

The Safety Officer is responsible for all personnel at an incident site, including non-tactical personnel. Ensure that the media, property owners, local or agency officials, and others who visit the incident are supplied with the appropriate PPE and trained in its use.

The Safety Officer must ensure that personnel and others are not just handed a helmet and gloves, but are instructed on how to use the equipment that they are given and that they actually use it.

Topic Monitor Work and Rest Guidelines

Monitor Work and Rest Guidelines

- Monitor length of operational period
- Work and Rest Guidelines – 2 hours work to 1 hour rest

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Visual 10-12

Key Points

Refer to Handout 10-1: Effects of Fatigue.

At any incident site, the Safety Officer needs to be aware of how much time people are getting to rest. Driving home after working all night is extremely dangerous. Asking or requiring personnel to sleep before leaving the incident site can prevent accidents.

Work and Rest Guidelines are 2 hours of work to 1 hour of rest. Decision makers and workers suffer from fatigue issues and do not perform optimally without rest.

Topic

Monitor Work and Rest Guidelines (cont.)

Monitor Work and Rest Guidelines (cont.)



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Visual 10-13

Key Points

TopicAviation Mishaps

**Key Points**

In this picture, it appears that the helicopter hit a power line. Aviation assets are always exposed to hazards.

Topic Monitor Air Operations Activities

Monitor Air Operations Activities

- Field operations should be examined to determine whether Air Operations pose hazards to people on the ground
- Monitor to ensure that air safety requirements are being implemented and followed

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Visual 10-15

Key Points

The incident is responsible for aviation resources, even if they are based miles away. If aviation resources are in transit or have checked in, the Safety Officer is responsible for anything that happens to them until they return home.

Topic

Retardant Drop

**Key Points**

Retardant drops are usually a job for helicopters, but in the picture, it is being done by a fixed-wing aircraft. Making sure that the right type of equipment is used is a safety issue.

This may be another situation where familiarity breeds complacency.

Topic Coordinate With Ground Personnel

Coordinate With Ground Personnel



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Visual 10-17

Key Points

Air assets working as support near Tactical Operations need to be in contact with ground personnel to make sure that neither creates a safety hazard for the other.

Air to ground is one of the four radio networks at an incident site (along with support, command, and tactical networks). The channel needs to be kept clear and used frequently.

Topic Monitor Air Operations Activities (cont.)

Monitor Air Operations Activities (cont.)

- Document all identified hazards or unsafe conditions
- Review compliance with agency flight duty policy/duty limitations with appropriate Manager

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Visual 10-18

Key Points

Document all identified hazards or unsafe conditions (anything that could disturb air operations). Coordinate with an Assistant Safety Officer or put the information in a Safety Message to warn them about the hazards. Examples include wires, power lines, cell towers, trees, smoke, or ground activities.

Review compliance with agency flight duty policy/duty limitations with the appropriate Manager. This refers to pilot work and rest hours. FAA regulations for pilot rest are 1:2 rather than 2:1. They also have an 8-hour maximum, and if they are on for 4 days, they must have 2 days off. There are also regulations about load/weight restrictions, especially for helicopters.

Topic

Ensure Compliance With Agency Flight Duty Policies

Ensure Compliance With Agency Flight Duty Policies



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Visual 10-19

Key Points

Topic Monitor Air Operations Activities (cont.)

Monitor Air Operations Activities (cont.)

- Review aircraft incident/accident reports
- Provide assistance to Air Operations Branch Director (AOBD) in dealing with preventative measures to ensure risks have been minimized or eliminated

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Visual 10-20

Key Points

Review aircraft incident/accident reports. Because precision is needed, Air Operations will review their policies and plans either every 24 hours or every operational period. Like dealing with other Units and Branches with a serious safety component, review the documentation produced by the Air Operations Branch to ensure that all accidents are reported and any trends are addressed.

Provide assistance to the Air Operations Branch Director (AOBD) in dealing with preventive measures to ensure that risks have been minimized or eliminated, and hazards have been corrected.

Topic Monitor Air Operations Activities (cont.)**Monitor Air Operations Activities (cont.)**

Include Air Operations in your normal Safety Officer activities.



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Visual 10-21

Key Points

Consult with Air Operations every day, inform them about changes in operations or safety information, and collect information from them.

Occasionally attend Air Operations Briefings to stay up to date and maintain your presence at all incident sites. Any information that might affect flight patterns or Air Operations should be communicated.

Topic Monitor Equipment and Personnel Safety

Monitor Equipment and Personnel Safety

The Safety Officer must be aware of personnel working near equipment.

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Visual 10-22

Key Points

The Safety Officer must be aware of personnel working near equipment. Remind such personnel about what to watch out for (this is another familiarity breeds complacency situation).

The Safety Officer should pay special attention to freelance operators or equipment operators who are not used to working around people. These individuals need to be watched more closely.

In a community disaster, people will show up and try to go to work. The Safety Officer can use them, but he or she will need for them to be under his or her supervision, communications, and incident command. One way to avoid uninspected or unauthorized vehicles from being used at the incident site is to use placards or markings on all approved equipment.

Topic**Equipment and Personnel Working Closely**

Equipment and Personnel Working Closely



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Visual 10-23

Key Points

This is a picture of a wildland incident, but it could just as easily be after a flood or an ice storm, or even the building of a drainage ditch.

Topic

Equipment and Personnel Working Closely (cont.)

Equipment and Personnel Working Closely (cont.)



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Visual 10-24

Key Points

Topic Equipment and Personnel Working Closely (cont.)

Equipment and Personnel Working Closely (cont.)



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Visual 10-25

Key Points

There is a worker in the water between the two heavy machines. This is a very dangerous situation! The equipment operators must check for visual confirmation of where the worker is before operating the equipment.

TopicEquipment Working Above Crews

Equipment Working Above Crews



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Visual 10-26

Key Points

This is a picture of a crane pulling a barge out of the water.

Operators must be aware of the location of nearby crew members when they are operating equipment, especial with regard to lifting heavy loads.

TopicEquipment Not Suited for Task

Equipment Not Suited for Task



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Visual 10-27

Key Points

The picture shows the operation of equipment that is not suited for the task.

Note the use of PPE by the personnel in this picture. One worker has full gear and a fire hose, but another worker with less protection is standing in front of him.

Topic Monitor Communications

Monitor Communications

- The four types of communication channels
 - Command
 - Tactical
 - Support
 - Air to ground

- Why is communication so important?

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Visual 10-28

Key Points

The four kinds of communications channels are:

- Command: Command and General Staff, Branch Directors, and Division Supervisors
- Tactical: Particular worksite to accomplish work
- Support: For the Logistics, Planning, and Finance Sections
- Air to ground: For tactical communications with Air Operations

Communication is essential for command and control so that Units can receive information updates (for example, changes in the weather, tactical adjustments, safety mitigations) and personnel can exchange information while they are working an operation.

Tactical channels need to be clear of other traffic and interoperable with all crews. All personnel need to have functioning equipment.

The Safety Officer also needs to ensure that all Units stay on their assigned channels so that they can receive information on tactical or safety adjustments.

Note that cell phones are not as reliable as radios and can't be monitored, although they can be necessary at some incident sites. Also, personnel may use cell phones to call home when they should be resting or working. Both of these items are safety issues.

Topic

Human Repeater

Human Repeater



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Visual 10-29

Key Points

Topic Monitor Firing Operations

Monitor Firing Operations

- Communication and coordination when implementing burnout operations
- Qualifications
- Aerial ignition (burn plan)
 - Helitorch
 - Plastic sphere dispenser

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Visual 10-30

Key Points

Although this slide is specific to wildland incidents, no State is immune from such incidents. The personnel who are least familiar with firing operations are the ones that get in trouble. Make sure that qualified personnel are doing the work.

For any intrinsically hazardous operation, you will need to think about the same issues: communications, the qualifications of personnel, and the safety of the plan.

Topic Monitor Travel and Transportation

Monitor Travel and Transportation

- Ground
- Hazardous material
- Foot travel
- Helispots

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Visual 10-32

Key Points

TopicAppropriate Equipment to Meet the Need

**Key Points**

You need the appropriate equipment to meet the need.

For example, helicopters have load limits and higher elevations change those limits. There are regulations for carrying loads over major highways or residential areas, so using a helicopter can create safety issues and may not be the best mode of transport to use.

Topic

Hazardous Material Properly Secured in Transport

Hazardous Material Properly Secured in Transport

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Visual 10-34

Key Points

The propane tanks shown in the picture need to be stabilized, secured, and ventilated. A propane tank that tips over can become a flame thrower. The use of propane tanks in enclosed spaces also presents a carbon monoxide risk.

Topic Monitor Hand Tools

Monitor Hand Tools

- Dull blades
- Chips or nicks in blades
- Broken or splintered handles
- Wrong tool for proposed action

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Visual 10-35

Key Points

Hand tools refer to conventional tools like shovels, saws, or axes. Hand tools may be necessary during a rural incident or in some urban settings where power tools cannot be used.

Dull or chipped blades and broken or splintered handles are a risk because they slip or break easily, and the user will get tired because they are forced to work too hard. Make sure that crews use the right tools for the job and keep them in good condition.

TopicMonitor Hand Tools (cont.)

Monitor Hand Tools (cont.)



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Visual 10-36

Key Points

This is a sharpening tool in use, which presents its own safety risks.

Topic Monitor Power Tools

Monitor Power Tools

- Dull blades
- Bent bars/blades
- Loose/Missing parts
- Poor operating condition

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Visual 10-37

Key Points

Power tools have some of the same safety issues as hand tools, as well as other issues:

- Ensure that power tools are in good operating condition
- Ensure that personnel are trained to use the particular power tools
- Different brands present certain safety issues with regard to training and the use of spare parts

Addressing this level of detail is likely to be the responsibility of an Assistant Safety Officer, but it is what the Safety Officer should look for when observing operations at an incident site.

Topic Monitor Gas-Powered Hand Tools

Monitor Gas-Powered Hand Tools

- Hot mufflers/spark arresters
- Spark arrester not working
- Fuel flammable and explosive
- Fuel spills
- Mixed fuel (label containers)

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Visual 10-38

Key Points

Some safety issues with gas-powered tools include:

- Hot mufflers/spark arresters
- Spark arrester is not working
- Fuel is flammable and explosive
- Fuel spills
- Mixed fuel (containers should be labeled)

Gas-powered tools can cause fires or burn the operator. Operators must be trained and the equipment must be in good shape.

Topic

Monitor Gas-Powered Hand Tools (cont.)

Monitor Gas-Powered Hand Tools (cont.)



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Visual 10-39

Key Points

Topic

Monitor Urban Interface

Monitor Urban Interface

What are the major hazards of working in an urban area?

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Visual 10-40

Key Points

Topic Monitor Responder Safety

Monitor Responder Safety

- Are personnel qualified for their positions?
- Are briefings being given (operational period, field)?
- Are Lookouts, Communications, Escape Routes, Safety Zones (LCES) being adhered to?
- Standard Firefighting Orders and Watchout Situations
- Handouts 10-2, 10-3, 10-4

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Visual 10-41

Key Points

The qualifications of personnel are often determined by the sending agency. The Safety Officer can pre-plan to ensure that there are enough qualified personnel on call for a task.

At the beginning of an incident or if pressed, the Safety Officer may have to use unqualified personnel, requiring extra attention from the Safety Officer. The Safety Officer must ensure that qualified personnel are doing the work, not just that they are available to do it.

Briefings are always required for all Supervisors and all operational periods. The Safety Officer must make sure that everyone gets those briefings, even if he or she has to do multiple or radio briefings to reach everyone.

The Safety Officer must ensure that lookouts, communications, escape routes, and safety zones (LCES) are being adhered to.

Refer to handouts:

- Handout 10-2: Standard Firefighting Orders: These are rules of engagement for wildland personnel that were developed because of injuries that had occurred, but they can also apply to incidents outside of wildland areas
- Handout 10-3: Watchout Situations: These are situations of concern with problems that should be addressed

- Handout 10-4: Standard Firefighting Orders and Watchout Situations Pocket Guides

Topic Exercise Emergency Authority to Stop and Prevent Unsafe Acts

Exercise Emergency Authority to Stop and Prevent Unsafe Acts

Use direct intervention to correct any extremely dangerous acts outside the scope of the Incident Action Plan. For example, riding in restricted aircraft

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Visual 10-42

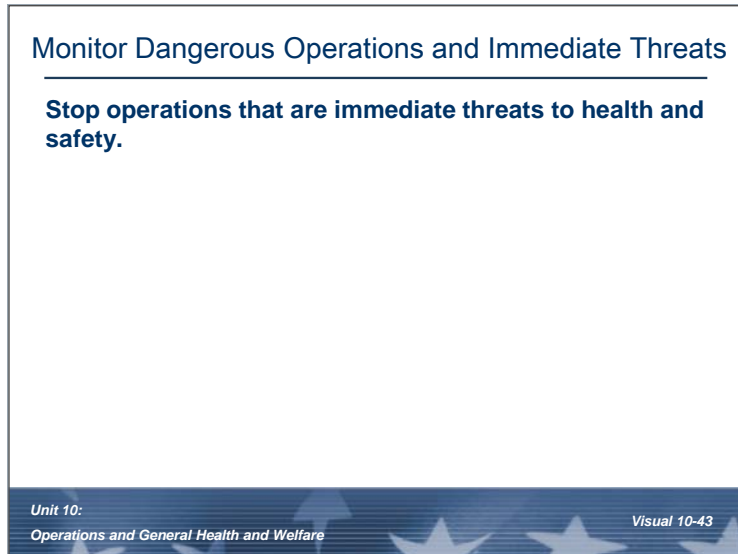
Key Points

When a dangerous action is being taken outside the scope of the IAP, such as not following the mitigations in the Incident Safety Analysis (ICS Form 215A), the Safety Officer can stop them with the full authority of the Incident Commander.

Safety comes before rank. However, if personnel are willing to take the risk, the Incident Commander can overrule the Safety Officer.

The Safety Officer can stop anything that is immediately dangerous to life and health, especially when the action is outside the scope of the IAP. For example, restricted aircraft have limitations on who can board, as well as how many people can board at the same time.

Topic Monitor Dangerous Operations and Immediate Threats

**Key Points**

Although the Safety Officer can stop operations that are an immediate threat to health and safety, he or she cannot stop every action that is a risk.

Response operations are inherently dangerous. If mitigations are being followed according to the plan, the operation should continue under observation.

Anything not immediately threatening to life and health should be stopped through regular channels by approaching the Supervisor of the personnel.

Procedure to Stop Dangerous Operations

DOCUMENT THE INCIDENT

It is essential for the Safety Officer to write everything down and keep good documentation so that any questions that arise can be answered. He or she won't be at fault for ensuring safety. Whenever the Safety Officer stops operations, he or she should document it in the Unit Log.

CONTACT THE DIVISION SUPERVISOR

At a minimum, the Division Supervisor needs to be notified because there was a safety issue or correction under their jurisdiction. It is their responsibility and they need to be able to oversee the correction. In addition, the Safety Officer is not their boss and he or she needs to work with the Division Supervisor.

INFORM THE INCIDENT COMMANDER

The Incident Commander also must be informed because it happened under his or her jurisdiction as well, and because he or she may feel that the risks are worth taking. If this was a pre-determined calculation, then the Safety Officer needs to work on communication procedures with the Incident Commander to ensure that the Safety Officer is notified of dangerous operations in advance, whenever possible.

Topic Exercise Emergency Authority to Stop and Prevent Unsafe Acts (cont.)**Exercise Emergency Authority to Stop and Prevent Unsafe Acts (cont.)**

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Visual 10-44

Key Points

This picture of an Urban Search and Rescue operation could be after a tornado or a flood; it looks like a structural collapse. The safety issue in this picture is that personnel are not always trained to handle dogs or work near animals.

Topic

Burnout Operations

Burnout Operations



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Visual 10-45

Key Points

If the wind changes while this team member is working, it will be a very dangerous situation. Unless this is a considered action with no alternative possible, it should not occur.

Topic Urban Search and Rescue

Urban Search and Rescue



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Visual 10-46

Key Points

This is Santa Cruz, CA, after an earthquake, but it could be anywhere after a tornado or an earthquake. General safety issues include watching for looters and keeping the owners safe if they try to return.

At this incident, the IMT had to resist political pressure to find a missing girl because they determined that working at night was too unsafe.

Topic Exercise Emergency Authority to Stop and Prevent Unsafe Acts (cont.)

Exercise Emergency Authority to Stop and Prevent Unsafe Acts (cont.)

The normal procedure is to work with the appropriate Unit Leader or Supervisor.

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Visual 10-47

Key Points

The normal procedure is to work with the appropriate Unit Leader or Supervisor.

The Safety Officer cannot intervene every time there is an unsafe situation. If a food preparation worker needs gloves, the Safety Officer should go to their Unit Leader or Supervisor and work with them to take corrective action.

The Safety Officer still needs to inform the Incident Commander about anything that he or she corrects outside of the normal plan. The Incident Commander needs to know about all problems.

The Safety Officer still needs to document his or her actions.

Topic

Objectives Review

Objectives Review

- 1. What methods can the Safety Officer use to promote the general health and welfare of incident personnel?*
- 2. How can the Safety Officer ensure that the work/rest guidelines are followed?*
- 3. What corrective actions would the Safety Officer take and who would he/she contact when unsafe aviation situations have been identified?*

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Visual 10-48

Key Points

TopicObjectives Review (cont.)

Objectives Review (cont.)

4. *What are some areas of concern for the Safety Officer in the field?*
5. *How can the Safety Officer stop an unsafe act?*

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Visual 10-49

Key Points
