

CHAPTER 10 - HAZARD CONTROL PROCEDURES AND EQUIPMENT

INTRODUCTION

1. This chapter is designed to be utilized by the IIC and all AIA representatives and FSI team members in conjunction with the A-GA-135-002/AA-001, Occurrence Investigation Techniques for the Canadian Armed Forces, and in particular with Chapter 11 of that manual. The A-GA-135-002/AA-001 is a very detailed technical manual that deals with the techniques and procedures used by DND/CAF investigators; although not on wide distribution, it is readily available from DFS or local WFSOs. Of note, much of the content of Chapter 11 of that manual has been obtained from a similar document published by TSB.
2. Occurrence scenes are dangerous not only due to the presence of biological hazards (biohazards) like blood-borne pathogens, but also due to armament, ejection seats, caustic or otherwise dangerous liquids (such as hydrazine, otto-fuel, liquids carried as cargo, aviation fuel and lubricants etc), fire, smoke, LOX, pressurized containers, damaged and inflated tires, jagged metals, carbon fibres, radiation from aircraft instrumentation or other aircraft components, and other substances that can harm personnel. The personal protective equipment (PPE) supplied to occurrence responders and AIA investigators is primarily designed to offer protection from some of these hazards (airborne particulates, biological agents and some puncture protection) but in no way is protection against all hazards assured. With this in focus, it is essential that constant awareness of hazard possibilities be undertaken by site managers and prudent action to avoid harm be taken on a constant basis. When unknown hazards are encountered, expert advice shall always be sought to avoid further damage to property or exposure to personnel on the scene.
3. Chapter 11 of the A-GA-135-002/AA-001, Occurrence Investigation Techniques for the Canadian Armed Forces, details a biohazard exposure control plan, which must be available and consulted whenever human remains are present on an occurrence site. In addition to the bodies of the deceased, an accident site may contain liquid, semi-liquid and dried blood, other bodily fluids, and fragmented and otherwise unrecognizable bone, tissue and internal organs. Any of these substances could present pathogen dangers and proper precautions are essential.
4. Many of the techniques and principles discussed in Chapter 11 of the A-GA-135-002/AA-001 and in the following paragraphs can be applied to other hazards encountered on an occurrence site. For example, the access control precautions utilized to minimize exposure to personnel for a biohazard can be similarly used to avoid exposure to a hazardous liquid or an unsafe ejection seat on scene. Therefore, the principles within the biohazard exposure control plan

should also be utilized to minimize exposure to all hazards on the occurrence scene.

UNIVERSAL PRECAUTIONS

5. Vaccinations have long proven to be effective in combating infections; however, at an accident site, additional measures must be taken to further reduce the likelihood of infection or the spread of the pathogens. The medical profession and health care agencies, in their approach to precaution against infection, have adopted a concept of universal precaution. This concept, which has been widely adopted by other investigative agencies, has been accepted by DFS (the AIA) as one of the cornerstones of its biohazard exposure control plan.
6. Universal precaution is simply an approach to infection control and can be used for exposure to other hazard types as well. When applied to aviation accident investigations, this approach requires that investigators treat all human blood and body fluids as if they contained blood-borne pathogens. In addition, since it is not possible to readily identify blood and other co-mingled contaminated body fluids at an accident site, it is prudent to take universal precautions while working around and inside the wreckage and while handling the wreckage at the site or while performing offsite examinations. Similar protocols will be effective in the reduction of exposure risks for other type hazards too.
7. Universal precautions require investigators to take measures to protect themselves by preplanning prior to undertaking investigation tasks. Once involved in investigative activities, universal precautions require that investigators apply engineering controls that isolate or remove the blood borne pathogen hazard (and other hazard types). Finally, universal precautions require that investigators adopt work practices that reduce the likelihood of exposure by altering the manner in which investigative tasks are performed. Due to the unique nature of each accident site, universal precautions must, of necessity, be tailored by the investigator to meet the individual circumstances.
8. As part of the investigator's preplanning process, universal precautions, as a minimum, includes the following:
 - a. appropriate inoculations;
 - b. training on biohazards (and other hazard types) associated with on-site and off-site examinations of evidence;
 - c. using procedures on the identification and control of a biohazard (or other hazard type) site;
 - d. selection, use and donning of personal PPE;
 - e. proper removal and disposal of contaminated PPE;

- f. understand work practices designed to minimize exposure;
- g. using procedures for decontaminating investigative equipment and evidence;
- h. using the procedures for shipment of contaminated evidence to off-site examination facilities; and
- i. using appropriate procedures for an exposure incident.

IMPLEMENTATION AND MANAGEMENT

9. The details on implementing these necessary universal precaution items during an investigation are contained in the A-GA-135-002/AA-001. It is nonetheless essential that the investigation team lead by example at occurrence sites. This means that the IIC shall brief all personnel that could be exposed to such hazards, determine who is appropriately trained to handle the hazards, and constantly be vigilant regarding the hazard potential for any personnel associated with the occurrence investigation. By necessity there will be several and perhaps many personnel involved in the investigation of an occurrence that will have absolutely no training or knowledge regarding these types of hazards. Under such circumstances, it is very important for the AIA members of the investigation to demonstrate the correct behaviours around all of the hazards at an occurrence site so that untrained personnel can emulate the correct behaviour they observe by the professional investigators.

10. In a similar vein, the IIC and investigation team members should be alert for concerns raised by untrained personnel on the scene or observations from other experts, such as salvage officers, armament technicians, environmental officers or OSCAR personnel. Any of these personnel may have valid and actionable information that could minimize the hazard exposure risks and so all points should be considered as the site plan is put in place and amended on a daily basis.

11. Record keeping of exposure to occurrence site hazards is required, even if proper procedures are followed throughout the investigation. This protects individuals from the consequences of exposure to unknown hazards and possible associated health problem at a later date as the record will be traceable and might help with diagnosis and treatment. Also, the record may be of value from a pension implication perspective.

EQUIPMENT

12. AIA investigators generally should arrive at an accident scene with appropriate PPE for the first few days. This typically will be one "A" kit and two "B" kits with supplemental equipment such as heavy duty and usage particulate masks and filters. The IIC should attempt to determine the extent of the hazards at the occurrence site and then request supplemental supply through local

suppliers or, if necessary, through DFS. Also, health protection kits are prepositioned at various locations in Canada. Requests for these kits to be made available should be processed as soon as the possibility of their use is anticipated. Full details on practices, procedures and kit contents can be found in the A-GA-135-002/002, which should be continually consulted during any situation where hazards are encountered. Of note, it is easy to become complacent about such hazards since their effect on personnel is usually long term; therefore, the warnings and briefings must become part of the daily routine with appropriate updates made as hazards change. Also, climate can be a real challenge in these situations when heat makes use of the PPE onerous and cold makes decontamination extremely difficult. The investigation team must deal with these challenges in a professional manner and seek advice when unexpected problems arise.