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## OCCUPATIONAL HEALTH & SAFETY

A Plan to Cope with Accidents at the Research  
Establishment of the Australian Nuclear Science  
and Technology Organisation, Lucas Heights, NSW.

Approved by the Director, State Emergency Services  
and Civil Defence and the Australian Nuclear Science and Technology  
Organisation.

Registered as an approved plan under the provisions  
of Sections 10 and 15 of the NSW State Emergency  
Services and Civil Defence Act, 1972 (as amended).

A Plan to Cope with Accidents at the Research  
Establishment of the Australian Nuclear Science  
and Technology Organisation, Lucas Heights, NSW.

OCTOBER 1989

## ABBREVIATIONS

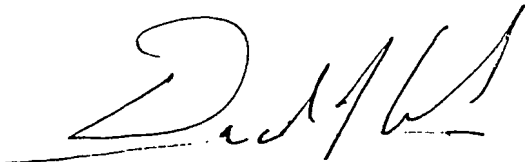
ANSTO	Australian Nuclear Science and Technology Organisation
APTCARE	A Plan to Cope with Accidents at the Research Establishment (of the Australian Nuclear Science and Technology Organisation)
ASO	Area Safety Officer
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DOE	Duty Operations Engineer
DOI	Duty Operations Inspector
DO	Duty Officer
DSC	Duty Safety Coordinator
DSS	Duty Safety Supervisor
EAC	Emergency Alarm Centre
EAM	Emergency Alarm Monitor
EOCC	Emergency Operations Control Centre
FCC	Field Control Centre
HIFAR	High Flux Australian Reactor
HSS	Health and Safety Surveyor
IAEA	International Atomic Energy Agency
LHRL	Lucas Heights Research Laboratories
LC	Local Controller
LLWP	Local Liaison Working Party
NH&MRC	National Health and Medical Research Council
OCH	Operations Command Headquarters
OIC	Officer in Charge
SCO	Safety Control Officer
SES	State Emergency Services and Civil Defence Organisation
SMO	Site Medical Officer
SRO	Senior Reactor Operator

## FOREWORD

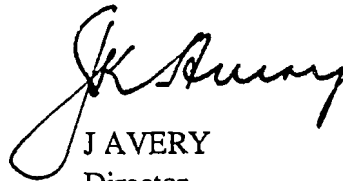
This Plan (APTCARE) details command, coordination and support responses of Commonwealth and State Authorities in the event of an accident with off-site consequences at the Lucas Heights Research Laboratories.

The Plan has been prepared by the ANSTO Local Liaison Working Party, comprising representatives of the Australian Nuclear Science and Technology Organisation, NSW Police Department, NSW Board of Fire Commissioners, NSW State Emergency Services and Civil Defence Organisation, NSW Department of Health, NSW Department of Environment and Planning and Sutherland Shire Council. The contribution made by officers from these organisations in the formulation of emergency planning measures is gratefully acknowledged. All authorities represented on the Local Liaison Working Party have agreed to the support and response arrangements as set out in this Plan.

The "APTCARE" document is an approved Plan within the meaning of Sections 10 and 15 of the NSW State Emergency Services and Civil Defence Act of 1972 (as amended).



DAVID J COOK  
Executive Director  
ANSTO



J AVERY  
Director  
State Emergency Services and Civil Defence

Date: 16<sup>th</sup> October 1989

Date: - 8 NOV 1989

**AMENDMENT RECORD**

Proposals for amending this Plan are to be forwarded to the Chairman, ANSTO Local Liaison Working Party, Lucas Heights Research Laboratories, Private Mail Bag 1, MENAI, NSW, 2234.

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**AMENDMENT LIST**

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<b>NO.</b>	<b>DATE</b>	<b>AMENDED BY</b>	<b>DATE</b>
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## CHAPTER ONE : INTRODUCTION

### **101 Authority for the Plan**

This Plan has been produced under Section 15 of the State Emergency Services and Civil Defence Act, 1972 and is consistent with the Australian Nuclear Science and Technology Organisation (ANSTO) Act, 1987.

The Plan has been ratified by the Australian Atomic Energy Commission (now ANSTO) Local Liaison Working Party (LLWP), established to prepare emergency plans in 1964 by agreement between the Prime Minister and Premier of New South Wales. Chaired by the Director, Occupational Health and Safety, ANSTO, the LLWP includes representatives from ANSTO, NSW Police Department, NSW Board of Fire Commissioners, NSW State Emergency Services and Civil Defence Organisation, Department of Health, NSW, the NSW Department of Environment and Planning and Sutherland Shire Council. The first five organisations provide the necessary supportive elements of the Plan.

The Plan was approved by the Australian Atomic Energy Commission (AAEC) on 1/8/85 and by the Director, State Emergency Services and Civil Defence on 16/1/86.

### **102 Aim of the Plan**

The aim of the Plan is to detail the arrangements for the command, control, coordination and support responses of the Commonwealth and State authorities in the event of an LHRL Reference or lesser Accident.

### **103 The LHRL Reference Accident**

The LHRL Reference Accident is a radioactivity incident which assumes the loss of coolant from around the fuel elements (or core) of the High Flux Australian Reactor (HIFAR) while it is operating at full power. The fuel elements melt down and a subsequent leak occurs of radioactive fission products into the reactor's containment building. In turn, a slow leak to atmosphere of these same radioactive fission products takes place.

The probability of a reference accident occurring is very low. Nevertheless, APTCARE has been produced to cater for such a 'worst-case' scenario. It comprises an effective set of procedures to counter any type of accident up to and including the reference accident with both on- and off-site consequences.

## CHAPTER TWO : COUNTERING THE EMERGENCY

Serious effects on the LHRL environs and the population therein could arise from ANSTO activities only if there were a massive release of radioactive or toxic materials to the atmosphere; the effects of smaller releases would be ameliorated to a large extent by the presence of the existing buffer zone, of 1.6 km (1 mile) radius centred on HIFAR, wherein there are no residences. The legal responsibilities for implementing any necessary countermeasures outside Commonwealth-owned land rest with NSW Government instrumentalities.

### 201 Classification of Possible Hazards

The safety of ANSTO activities is under continual surveillance and proposed new activities are subjected to safety analyses before they are started. Current activities at the LHRL present a minimal possibility of any significant radiological hazard. They are designed to keep radiation exposures within the limits recommended by the International Commission on Radiological Protection and endorsed by the National Health and Medical Research Council (NH&MRC).

The fact that some accidents may create hazards for the public is recognised; such hazards can occur if radioactive or toxic materials are accidentally released to atmosphere.

Members of the public may be harmed by the accidentally released materials if excessive amounts are inhaled or ingested (e.g., by consuming fruit or vegetables contaminated by radioactive or other toxic materials or by drinking milk from cows grazing on pastures contaminated by radioactive materials, e.g., iodine-131) or if significant external ionising radiation exposures are incurred.

### 202 Accident Detection

Some accidents are readily apparent and easily detected by persons in the vicinity; others are more easily detected by instruments. Automatic detectors of fire, ventilation failure, effluent overflow, mains power failure, gamma radiation etc, are installed at appropriate points throughout the LHRL. Besides giving a local warning in the building, such detectors send signals to an alarm console in the ANSTO Emergency Alarm Centre (EAC). Complementary to them and for types of accidents not automatically detected by instruments, there are manually operated alarms which signal the EAC.

The EAC is manned by an Emergency Alarm Monitor (EAM) at all times and the ANSTO Emergency Operations Control Centre (EOCC) is the focal point for major accident control. The EAM is provided with procedures to be followed in the event of various potential accident situations. A public address system covering the LHRL is operated from the EAC, and the information and facilities necessary for effective control are readily available. A distinctive warning signal can be transmitted over the LHRL public address system in the event of an emergency.

### 203 Emergency Environmental Surveys

In the early stages of an accident that could lead to the release of airborne fission products or other radioactive or toxic materials, the main hazard to the health of the local population would arise from inhalation of the released material. In later stages other exposure routes could become dominant such as from the consumption of contaminated foodstuffs.

Emergency environmental surveying by ANSTO (see below) will provide data needed for:

- evaluation of potential health hazards to persons who may be affected by the escaping materials;
- decisions on relevant countermeasures (e.g., sheltering, stable iodine prophylaxis, restriction on consumption of foodstuffs or evacuation of persons) to counteract any effects of the accident on the local population;
- determination of when the accident situation has been terminated and normal activities may be resumed in affected areas.

### 204 Methods for Radiological Surveys

Emergency radiological surveying requires:

- assessment of the type and magnitude of radiological hazards involved in an accident;
- air sampling to determine airborne concentrations of released radionuclides, and to estimate inhalation hazards to the general population;
- analyses to determine concentrations of radionuclides in milk and other foodstuffs;
- measurement of surface contamination in areas affected by released material;
- measurement of concentrations of radionuclides in water courses and other nearby bodies of water;
- other radiation protection measurements (e.g., external gamma radiation dose rate) required by the nature of the accident.

While daily meteorological data on the Sydney area synoptic situation and dispersion conditions, supported by on-site wind speed and direction indicators, is continually available, detailed and continuing local area predictions will be required from the Commonwealth Bureau of Meteorology in the event of an accident.

Measurements would be made of radioactive contamination and external radiation at the LHRL and in the surrounding area. Initial surveys would be made down-wind at pre-designated points at the perimeter fence and off-site; further surveys would then be made

to determine the extent of affected areas off-site in order to assess the extent of possible hazards to the general public. Information from ANSTO emergency environmental survey teams would be transmitted to the EOCC by radio or telephone.

If emergency conditions prevent the radiochemical analysis of environmental samples at the LHRL, the ANSTO mobile emergency laboratory, supplemented by the laboratory facilities and the staff of the Department of Health, NSW at Lidcombe would also be used.

## **205 Methods for Toxic Materials Surveys**

Emergency toxicological surveying requires:

- assessment of the type of chemical and its effects on people and the environment;
- air sampling to determine airborne concentrations of released toxic materials and to estimate hazards to the general population;
- analyses to determine concentrations of toxic materials in foodstuffs;
- analyses to determine concentrations of toxic materials in people in the immediate vicinity of the accident;
- measurement of surface contamination in areas affected by the released material;
- measurement of concentrations of the toxic materials in watercourses and other nearby bodies of water;
- other measurements considered necessary as required by the nature of the accident.

## **206 Countermeasures**

Following a major accidental release of radioactive or toxic materials, measures to counteract or minimise the effects on persons in the neighbourhood may include:

- sheltering;
- evacuation of persons in the path of the released plume containing radioactive or toxic materials;
- prophylaxis by administration of stable (inactive) iodine to persons in the path of a radioactive plume containing radioiodine;
- restrictions on the use of contaminated foodstuffs (e.g., milk, eggs, vegetables etc).

Instituting countermeasures may incur some additional risks, together with inconvenience and expense, and any such disadvantages should be kept as small as possible. The risks from radiation exposure arising from the accident must be critically compared with the risk arising from the countermeasures. Thus, the final selection of countermeasures requires judgement and detailed consideration of the nature of the incident, the nature of the population at risk and the nature of the area.

The Department of Health, NSW is responsible for determining whether or not countermeasures for accidents having consequences for members of the public should be implemented and ANSTO is responsible for providing technical advice to assist the Department of Health, NSW in determining these countermeasures.

The National Health and Medical Research Council has set values for use as 'emergency reference levels for major radiation accidents'. Emergency reference levels are not rigid limits and some working guidelines for their use are given in Annex A.

### **207 Significance of Radioiodines**

If significant amounts of radioactive iodine isotopes were released in a reactor accident these would be the fission products of major interest, especially iodine-131 (half-life eight days). The Windscale (UK) accident in 1957 showed that, during the first few weeks after an accident, iodine-131 could, in the worst case, be at least two or three orders of magnitude (100 to 1000 times) more hazardous than, say, strontium-90. This is because of the abundance of radioiodines in fission products, their volatility, their biological specificity and their ready incorporation into food chains. However in the Three Mile Island accident of 1979 (involving a water cooled reactor with modern containment) the main fission products released to the environment were radioactive noble gases (mostly xenon-133); only small amounts of radioiodines were detected.

In the unlikely event of the release of radioactive iodine isotopes from an accident with HIFAR the effect would be much less than in the Windscale accident because HIFAR is a water-cooled research reactor with a containment shell and a smaller inventory of radioiodines in its core. The magnitude of the release in the Windscale accident was high because of the design of the reactor and its containment.

About a third of all nuclear fissions give rise to radioiodines somewhere in the radioactive decay chain. About 3% of all fissions give rise to iodine-131, which is as significant a biological hazard as all the other radioiodines combined. Iodine, and many of its compounds, are quite volatile, even at room temperature, and are readily released as a vapour if exposed to the atmosphere.

### **208 Biological Specificity of Radioiodines**

Whether from the air we breathe or the food we eat, about 30% of any radioiodine taken into the body is concentrated and stored in the thyroid (a small gland of mass about 20 g, situated in the lower front part of the neck), unless the thyroid has been 'blocked' by the earlier

administration of a large dose of stable iodine. The remaining 70% of the iodine is eliminated in the urine within the following 24 hours. The unblocked thyroid thus receives a much higher dose (about 20,000 times as much) than the body receives as a whole.

## **209 Food Chains**

One form of radioiodine which could be released during a reactor accident is elemental iodine vapour,  $I_2$ , which is fairly reactive and deposits readily on vegetation. If some of the area downwind of a reactor accident happens to be dairy cattle pasture, the consequences of the accident may be far more serious. Organic radioiodine compounds may also be released. However these compounds are not likely to bind to surfaces and only represent an inhalation hazard.

About 20% of the iodine-131 contamination eaten by a cow appears in the milk over the next 24 hours, and since cows graze on a large area each day, milk (from goats as well as cows) can become a very important pathway for members of the public to receive unacceptable doses of radiation. The importance of this pathway is illustrated by the fact that a person who drank milk from cows grazed in a contaminated paddock would receive an ingested radiation dose some 1000 times greater than the inhaled radiation dose he or she would have received by standing in the paddock, breathing in the radioactive cloud during its passage. Fortunately the ingestion pathway is amenable to control, providing prompt measures are taken, but the monitoring and control of the consumption of milk from a large area for several weeks may be needed if dairy cattle pasture is in the affected area. There are very few lactating cows or goats in the area surrounding the LHRL.

## **210 Sampling for Radioiodines**

To sample for radioiodines and other radioactive aerosols, air is drawn through a Maypack filter cartridge at a known flow rate by means of a small pump. The Maypack consists of a high efficiency particulate filter, followed by a small bed of specially impregnated granular charcoal to trap the radioiodine vapours. After sampling for a known period, the radioactivity on the cartridge is assessed by gamma counting, preferably with a multi-channel analyser.

## **211 Prophylactic Measures**

Stable iodine is effective in blocking the thyroid to radioiodine uptake. Stocks of prophylactic stable iodine tablets are kept at the LHRL for possible use by ANSTO and CSIRO staff in the event that a release of radioiodine causes an inhalation hazard. The Department of Health, NSW, holds stocks of stable iodine tablets for issue to the general public.

## **212 Personnel and Vehicle Monitoring and Decontamination**

Persons suspected of exposure to radioactive contamination would need to be segregated and monitored by officers of ANSTO or the Department of Health, NSW who would then carry out any minor decontamination if required. LHRL personnel with serious persistent personal contamination would be sent to the LHRL Medical Centre (Building 21) for medical treatment if practicable. Showering facilities for decontamination of contaminated persons are provided in a number of LHRL areas. Persons known or suspected to be at risk from internal radiation exposure would be appropriately monitored by ANSTO Personnel Dosimetry Service. Off-site persons who are contaminated would be monitored and decontaminated by the Department of Health, NSW assisted as necessary by ANSTO. Vehicles suspected of having been exposed to radioactive contamination would also need to be monitored and decontaminated.

If, for any reason, personnel and vehicle monitoring or decontamination, or both, could not be carried out at a gateway of the LHRL, checkpoints would be established at suitable roadside parking areas some distance away. These checkpoints cannot be designated in advance because they could only be selected after the nature and extent of the release, together with the meteorological conditions at the time, have been considered.

## CHAPTER THREE : COMMAND AND CONTROL

### 301 General Responsibilities of Participating Organisations in an Emergency

In the unlikely event of an LHRL Reference Accident, the responsibility for the command and coordination of off-site control measures rests with the Commissioner of the NSW Police or his nominee. The Executive Director, ANSTO has the responsibility for the command and coordination of on-site Commonwealth control measures and liaison with the relevant NSW Government authorities. A summary of responsibilities of respective organisations in the event of A and B class accidents is outlined in Tables 1 and 2. (See Section 402.1 for definitions of accident classes.)

### 302 Commonwealth

The responsibilities of Commonwealth authorities are:

#### 302.1 Australian Nuclear Science and Technology Organisation (ANSTO)

ANSTO is responsible for:

- implementing the plan APTCARE upon declaration of an emergency/accident;
- assessing the nature and significance of the emergency/accident;
- establishing effective on-site accident control points;
- alerting the relevant NSW State counter disaster authorities;
- providing monitoring teams to determine the on- and off-site levels of external radiation and contamination of the atmosphere and surfaces arising from the accident;
- advising the Department of Health, NSW of the results of emergency radiation or toxic materials monitoring and the potential risk to the local population;
- on-site evacuation if necessary;
- provision of on-site medical assistance;
- the issue and subsequent assessment of personnel monitoring devices for non-LHRL emergency response personnel operating within the LHRL site perimeter fence;
- contamination monitoring of personnel and vehicles;
- provision of decontamination and contaminated waste disposal facilities;
- alerting all appropriate Commonwealth and NSW Ministers and/or Permanent Heads of Departments;



- the decisions and actions necessary for the declaration of the termination of Class B accidents;
- restoring conditions to normal;
- supply of meteorological data for the Lucas Heights area to the Bureau of Meteorology to assist the Bureau to forecast weather conditions at Lucas Heights;
- prepare media releases and community announcements for dissemination by the Community Relations Office, NSW Police (see Annex B).

### **302.2 Bureau of Meteorology (BUMET)**

The Bureau of Meteorology is responsible for the provision, on request in the event of an accident, of detailed and continuing local area meteorological predictions, until advised by ANSTO that these are no longer required (see Annex C).

## **303 New South Wales**

The responsibilities of NSW State authorities are:

### **303.1 NSW Police Department**

The NSW Police Department is the authority responsible for the command, control and coordination of ALL off-site actions in the event of a declared emergency at the LHRL, with off-site implications (Class A accidents, see page 14). In particular it is responsible for:

- the establishment of a liaison communications centre in, or near to, the ANSTO Emergency Operations Control Centre (EOCC);
- the setting-up of roadblocks to control all entry/exit points on the periphery of the declared danger area;
- evacuation and registration of persons deemed to be at risk;
- distribution, on advice from the Department of Health, NSW of prophylactic stable iodine tablets;
- the decisions and actions necessary for the declaration of the termination of Class A accidents.

### **303.2 State Emergency Services and Civil Defence Organisation**

The NSW SES is responsible to assist the NSW Police as directed. Such duties could include:

- assistance with the distribution of prophylactic stable iodine tablets;

- assistance with the implementation of the APTCARE Evacuation and Welfare Sub-plan (Annex D) by providing assistance with the evacuation of risk/danger areas and the provision of short-term welfare and accommodation facilities for evacuees.

### **303.3 Department of Health, NSW**

The Department of Health, NSW is responsible for safeguarding the health of the public and for instituting, under NSW Police control, any necessary control measures. In particular, the Department is responsible for:

- providing independent radiological and/or toxicological surveys;
- determining the need for issue of prophylactic stable iodine tablets;
- providing advice to the NSW Police in consultation with ANSTO on decontamination measures external to LHRL;
- providing guidance to the NSW Fire Brigade and the Shire of Sutherland Bushfire Brigades on the decontamination of roads and other surface areas;
- deciding on the need for evacuation;
- deciding on the procedures to be taken, and their subsequent implementation, for control of contaminated foodstuffs;
- providing any necessary medical care for persons affected by the accident;
- providing off-site radiological monitoring teams to augment the ANSTO monitoring teams.
- advice to NSW authorities on the termination of Class A accidents.

### **303.4 NSW Fire Brigade**

In addition to its normal firefighting role, the NSW Fire Brigade is responsible for the decontamination of roads and other surface areas off-site under guidance from ANSTO and the Department of Health, NSW. In an emergency the Shire of Sutherland Bushfire Brigades are available to assist the NSW Fire Brigade.

### **303.5 NSW Central District Ambulance – Central District**

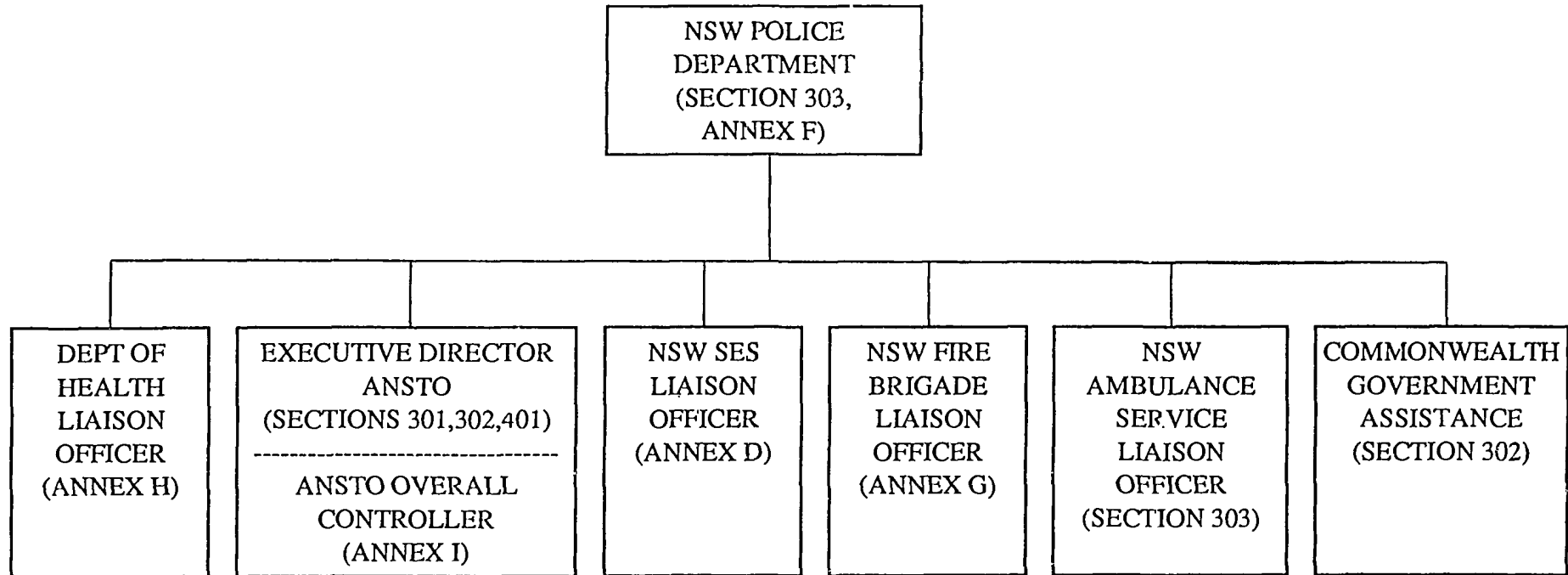
The Central District Ambulance Service is responsible for:

- providing in-field paramedical and first aid services for injured persons;
- assisting, where appropriate, with evacuation of aged or hospitalised persons;

- provision of transport of injured persons to appropriate hospitals, depending upon each hospital's bed availability, designated to treat such injuries sustained by those persons;
- provision of an Ambulance Liaison Officer to the command structure of the controlling authority at that time.

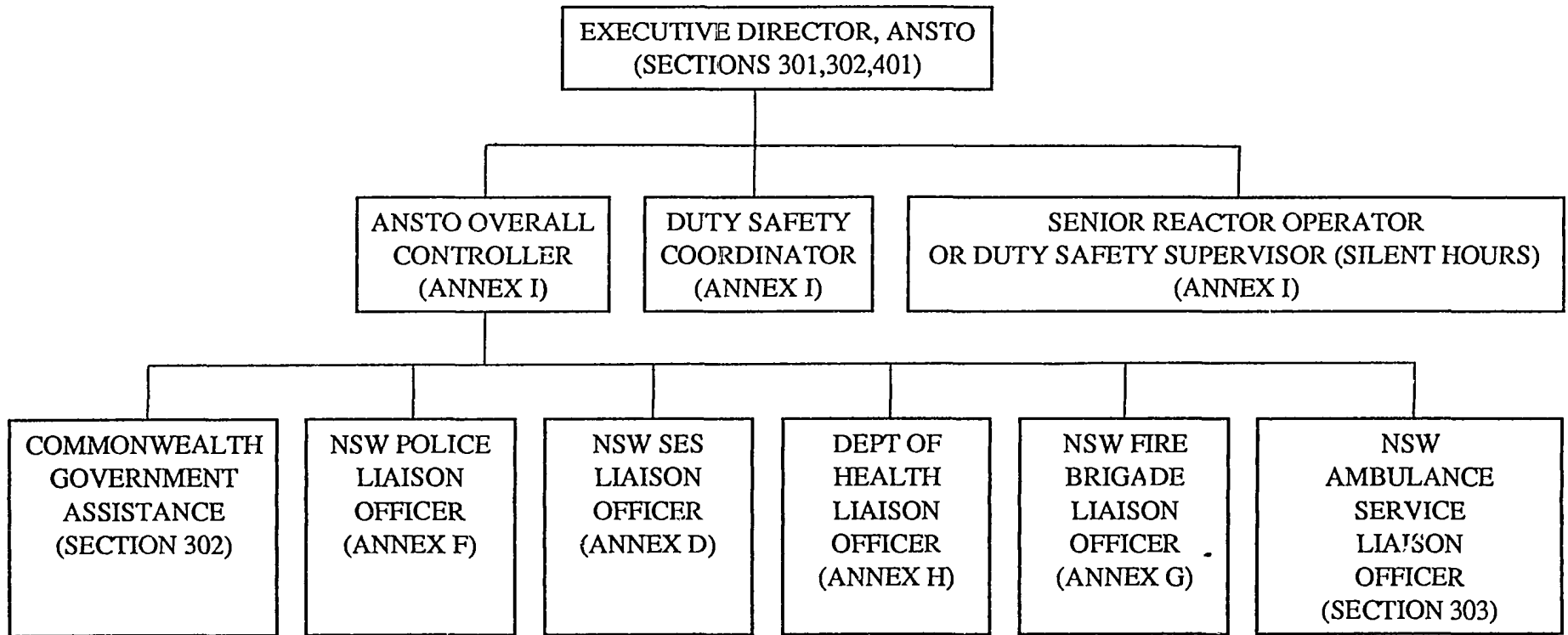
Activation of emergency procedures should be through the Coordination Centre (02) 20920 or 000.

**TABLE 1**  
**ORGANISATION FOR THE CONTROL OF EMERGENCIES**  
**HAVING OFF-SITE CONSEQUENCES (CLASS A ACCIDENTS)**



**TABLE 2**

**ORGANISATION FOR THE CONTROL OF EMERGENCIES  
HAVING ON-SITE CONSEQUENCES (CLASS B ACCIDENTS)**



## CHAPTER FOUR : PROCEDURES AND RESPONSIBILITIES

### 401 The Role of the ANSTO Site Emergency Organisation

The Executive Director, ANSTO has appointed a number of senior officers who are designated as 'ANSTO Overall Controllers'. The first officer contacted assumes the command, control and coordination role on-site in the event of an emergency/accident unless, and until, formally relieved by the Executive Director or an officer nominated by him. The Overall Controller commands the ANSTO Site Emergency Organisation.

The ANSTO Site Emergency Organisation is centrally controlled from the Emergency Operations Control Centre (EOCC), which in turn is provided with initial and subsequent accident data by the Emergency Alarm Centre (EAC).

The EAC is manned continuously by an Emergency Alarm Monitor (EAM). The EAM is alerted by a variety of alarm systems, both manual and automatic. He is provided with clear and unequivocal procedures to be followed in the event of an alarm/emergency. A site-wide public address system, activated from the EAC, is capable of transmission of a well-publicised alarm signal, the sounding of which alerts both emergency teams and all on-site personnel.

Accident response in an emergency is based on the immediate establishment of effective control of the situation, using the coordinated capabilities of both emergency services and Occupational Health and Safety personnel. Control is vested in nominated senior and supervising officers; safety coordination and specialist assistance is vested in professional officers qualified in the appropriate disciplines.

The Overall Controller is supported by a rostered Duty Safety Coordinator (DSC) and a Local Controller for the area involved in the accident. Additional support is provided by a Safety Control Officer (SCO) at the accident area, drawn from the Occupational Health and Safety Program's list of Area Safety Officers (ASOs). During the silent hours, further (and usually initial) support is provided by the Duty Safety Supervisor (DSS) and other shift personnel such as the Health and Safety Surveyor (HSS).

### 402 Classification of Accidents According to Extent and Duration

To assist in planning emergency responses, accidents have been classified in terms of their extent and of the duration of the resultant hazard(s). The Overall Controller determines the extent and declares the appropriate Class of Accident.

#### 402.1 Accident Severity

Two main types of accident are defined:

- **Class A Accident** – An accident which may cause potential hazards to individual members of the public outside the LHRL fence. Full emergency assistance may be required from NSW authorities.

- **Class B Accident** – An accident which would have no consequences outside the LHRL fence.

#### 402.2 Hazard Duration

These periods are defined as:

- **Long Duration Hazard** – which lasts 24 hours or more and can arise if hazardous materials are accidentally released within a building or containment system, and released to atmosphere;
- **Intermediate Duration Hazard** – which may include a major building fire, when hazardous materials might continue to be released to atmosphere for several hours;
- **Short Duration Hazard** – which may be an explosion or a similarly short duration release of hazardous materials, lasting only for minutes.

#### 403 Maps and Grid References

A composite map of the local area (Central Mapping Authority 1:25,000 Topographical) is to be used for plume plotting and control of countermeasures. When communicating grid references, the West-to-East coordinate is to be stated first and the South-to-North, second. For example, the local area map attached as Annex E would have 142 305 as the coordinates of the LHRL main gate.

For convenience, NSW Police vehicles use a 1:50,000 map with the same grid, but with superimposed alphabetical/numerical grid intervals. The local area map at Annex E includes this format. From West-to-East it has the interval C between coordinates 110 and 120, through to interval K between coordinates 190 and 200; while from South-to-North, the interval 1 falls between coordinates 260 and 270, through to interval 13 between coordinates 380 and 390.

#### 404 Communications

Communications procedures are to be based on those used by the NSW SES. LHRL site communications facilities include:

- telephones;
- telex;
- facsimile;
- radio, including base, mobile and hand-held;
- public address system;
- loud hailers;
- radio paging units;
- messengers.

## **405 Personnel Responsibilities**

Detailed responsibilities for the emergency response personnel are described in Chapter Five : Activation. However, the following provides general guidance on divisional and staff responsibilities:

### **405.1 Occupational Health and Safety Officers**

The first Occupational Health and Safety officer arriving at an accident area becomes the SCO, and until relieved, is responsible for providing the Supervising Officer of the Area (normally the appropriate area supervisor) with the health physics and safety advice and assistance necessary to control the hazards and minimise the effects of the accident. A small team of HSS is on duty during normal working hours and a roster system ensures that the DSC is available during the silent hours. The ASOs are also available during normal working hours and can be called in at other times if required.

Occupational Health and Safety officers have overall responsibility for:

- radiation and contamination surveys (e.g., air-sampling, personnel monitoring, surface contamination);
- personnel decontamination;
- advice on protective clothing and/or respiratory protection;
- advice to the Overall Controller on the issue of stable iodine tablets to LHRL personnel;
- advice on evacuation of areas of the LHRL or the whole site.

### **405.2 Personnel Outside an Accident Area**

The activation of the Site Warning Alarm and public address system will in turn alert all Building and Deputy Building Wardens. They have primary responsibility for the welfare and safety of all personnel in their buildings; in their absence, the building's nominated senior officer assumes this responsibility. Each building has a designated telephone for use by the Warden.

## **406 Evacuation**

The decision to evacuate the whole, or parts, of the LHRL site, is the responsibility of the ANSTO Overall Controller. Having made that decision, he must ensure that evacuation procedures:

- account for ALL personnel;
- ensure controlled movements;
- clearly define entry/exit and through routes on-site;



- specify on- and off-site assembly points;
- avoid further spread of contamination (e.g., decontaminate vehicles on-site);
- maintain normal site security and safety in all areas not directly affected by the accident;
- allow for off-site transit of adequate supplies of emergency equipment;
- ensure on-site retention of emergency equipment sufficient to combat the accident;
- dovetail into the NSW SES APTCARE Evacuation and Welfare Sub-Plan.

LHRL site evacuation plans are maintained by Occupational Health and Safety. They are to be exercised in site segments quarterly, and fully annually, at a time selected by the Executive Director, ANSTO.

#### **407 Medical Aid**

During working hours, the Site Medical Officer (SMO) and Nursing Sister are normally available in the LHRL Medical Centre, which is equipped with facilities for personnel decontamination. During the silent hours, the SMO can be contacted by telephone. The NSW Central District Ambulance has a response time, from call-out, of about 30 minutes.

An Occupational Health and Safety vehicle is to be available for the transport of serious cases of injury or illness.

#### **408 Accident Equipment**

On-site, a number of emergency cabinets have been strategically positioned to deal with a spill/release of radioactive or toxic materials and other types of accident. Their doors are distinctively marked with a YELLOW TRIANGLE. A contents list is affixed to each cabinet front and typically includes:

- respiratory protection;
- plastic suits, overshoes and gloves;
- decontamination materials;
- simple breaking and entering tools;
- blankets and a resuscitator.

##### **408.1 Emergency Equipment Reserves**

Additional supplies are held at the LHRL Fire Station. A range of health physics monitoring equipment is also available from the Occupational Health and Safety instrument store. The LHRL Emergency Response Vehicle carries a range of emergency equipment ready for immediate use.

## 409 Exposure to External Radiation

The following details the authorisation procedures for use in the event of a radiation accident. Also attached at Annex D are the 'Working Guidelines for using the Emergency Reference Levels of the National Health and Medical Research Council'.

### 409.1 Authorisation of Radiation Exposure

ANSTO personnel may be subjected to higher than normal radiation doses. In such cases, the maximum permitted exposed working period would be calculated, based on area radiation surveys and the 'radiation exposure balance' of affected personnel. When circumstances require the authorisation of whole body exposures greater than 1 mSv in eight hours, Occupational Health and Safety staff as specified below, can authorise the following radiation doses:

- Area Safety Officer – up to 5 mSv;
- Duty Safety Coordinator – up to 5 mSv
- Director, Occupational Health and Safety – up to 50 mSv.

Occupational Health and Safety staff are normally the only ANSTO staff permitted to authorise such radiation doses but during the silent hours, the following staff may authorise the doses specified:

- Duty Safety Supervisor (DSS) or Senior Reactor Operator or Duty Shift HSS (having consulted the DSC) – up to 5 mSv;
- OIC Fire Crew – up to 5 mSv;
- DSC – up to 30 mSv.

In every case where exposure to higher than normal radiation doses is authorised, affected personnel are to be first issued with a special personnel monitoring dosimeter, which must be worn in addition to the routine issue personnel dosimeter.

### 409.2 Estimation of Radiation Exposures

Exposure of personnel to external radiation in an emergency situation may be estimated from:

- individual personnel dosimeters;
- control dosimeters on personnel dosimeter racks on-site;
- other dosimeters at various positions on-site;
- radiation surveys of the accident area.

### 409.3 Relief of Staff

Some accidents would require operations staff to carry out remedial or recovery duties for some time; relief staff procedures must therefore be in place. Such procedures must allow for consideration, amongst other things, of:

- radiation doses received by those on duty;
- radiation doses expected for relief staff;
- access routes;
- the need for respiratory protection;
- the ability of on-duty staff to remain on duty;
- the availability of suitable vehicles for staff transport.

## CHAPTER FIVE : ACTIVATION

This Chapter summarises the responsibilities and actions required in the event of activation of APTCARE. For ease of reference, ANSTO and NSW authorities' actions are detailed in the Annexes.

### 501 General

As described in Section 301, the Executive Director, ANSTO is responsible for all Commonwealth control measures on site and for liaison with the NSW Government authorities. The responsibility for off-site control measures rests with the NSW Police.

### 502 Emergencies during Working Hours

When the EAM is required to communicate accident or emergency control information during normal working hours, the DSC proceeds to the EAC and decides whether or not the incident is of sufficient severity to justify alerting or summoning the rostered ANSTO Overall Controller, the Local Controller and/or emergency teams. The Director, Occupational Health and Safety or his deputy will decide whether or not to implement APTCARE.

### 503 Staff Action in an Emergency

When an emergency is declared, all personnel outside the immediate area must:

- avoid entering restricted areas;
- if outdoors, enter the nearest building, close the door(s), report to the Building Warden and follow the instructions given over the Site Public Address System;
- close all doors and windows and either turn off or switch airconditioning to recirculate;
- when instructed, shut down forced ventilation systems;
- stop using telephones;
- secure experiments and turn off all electrical equipment, sources of ignition and any other equipment likely to create a secondary hazard.

### 504 Emergencies during Silent Hours

When required to communicate emergency control information during the silent hours, the EAM informs the SRO and the DSS (depending on the incident site). The SRO must notify the Duty Operations Engineer or Duty Officer of any incidents involving the HIFAR area. The Duty Shift HSS, Plant Monitor or Reactor Operator assist by providing initial safety control measures and advice. The DSS or SRO, as the senior officers, decide whether the accident warrants summoning the DSC and the Overall Controller to the LHRL. The Overall Controller will be responsible for activating APTCARE. Actions and responsibilities from hereon are as described in the following Annexes.

- Annex C Bureau of Meteorology
- Annex D NSW State Emergency Services and Civil Defence Organisation
- Annex F NSW Police Department
- Annex G NSW Fire Brigade
- Annex H NSW Department of Health

### **505 Incident Check List**

An Incident Check List, for use as an aide memoire by emergency personnel, is attached as Annex I.

**WORKING GUIDELINES FOR USING THE EMERGENCY  
REFERENCE LEVELS OF THE NATIONAL  
HEALTH AND MEDICAL RESEARCH COUNCIL**

In an accident which releases radioactive materials to the environment, countermeasures to be taken to protect the general population must be considered in relation to the inconvenience, expense and possible harm that they may cause. In its recommendations on 'Emergency Reference Levels for Major Radiation Accidents' of May 1973, the NH&MRC provides the following guide to the emergency action required according to the risks of major biological damage that could otherwise occur:

- “where individual risks are less than  $10^{-4}$  emergency action is uncalled for;
- where individual risks fall in the range  $10^{-4}$  to  $10^{-3}$  countermeasures are indicated provided they do not entail risks to others and do not entail significant social upheaval;
- where individual risks fall in the range  $10^{-3}$  to  $10^{-2}$  countermeasures are indicated provided the overall risk can be reduced and the action is socially feasible;
- where individual risks exceed  $10^{-2}$  the case for inaction must be clearly agreed and stated by those responsible for emergency procedures;
- the decision to act or not to act in any particular situation is always that of the authorities responsible for emergency procedures.”

The NH&MRC emergency reference levels for dose associated with the numerical value of individual risk outlined above are given in Tables 1 and 2 as a function of action to be taken in an emergency.

Working guidelines for countermeasures for external radiation dose and for iodine-131 in air and in milk supplies derived from NH&MRC emergency reference levels are given in Tables 3, 4 and 5 and should be applied if an accident occurs that releases radioactive material to the environment.

**TABLE 1**  
**EMERGENCY REFERENCE LEVELS FOR RISK, WHOLE BODY DOSE AND**  
**THYROID DOSE (FROM IODINE-131)**

Individual risk of major adverse somatic effect	Whole body dose (millisievert)		Thyroid dose (millisievert <sup>131</sup> I)		Action
	Adults Children	Foetus	Adults	Children	
$10^{-4}$	10	5	100	30	Consider possible countermeasures
$3 \times 10^{-4}$	30	15	300	100	Control consumption of contaminated foodstuffs
$3 \times 10^{-3}$	300	150	3,000	1,000	Consider evacuation to avoid airborne exposure
$10^{-2}$	1,000	500	10,000	3,000	Take urgent countermeasures unless agreed otherwise by competent authorities

**TABLE 2**  
**EMERGENCY REFERENCE LEVELS FOR ENVIRONMENTAL**  
**CONTAMINATION BY IODINE-131**

Individual risk of thyroid cancer	Equivalent thyroid dose (millisievert)		Equivalent cloud dosage (GBq s m <sup>-3</sup> )		Equivalent milk contamination level (kBq L <sup>-1</sup> )		Action
	Adult	Child	Adult	Child	Adult	Child	
	10 <sup>-4</sup>	100	30	1.3	0.14	44	
3 x 10 <sup>-4</sup>	300	100	3.9	0.44	130	3.7	Control consumption of contaminated milk
3 x 10 <sup>-3</sup>	3,000	1,000	39	4.4	1,300	37	Consider evacuation to avoid airborne contamination
10 <sup>-2</sup>	10,000	3,000	130	14	4,400	120	Take urgent countermeasures unless agreed otherwise by competent authorities



**TABLE 3**  
**WORKING GUIDELINES FOR COUNTERMEASURES**  
**FOR EXTERNAL RADIATION DOSE**

The working guidelines are derived from NH&MRC emergency radiation levels for adults exposed to the gamma-radiation field in the immediate locality of an accident.

Estimated external radiation dose commitment*	Individual risk of major adverse somatic effect	Action
Less than 10 mSv	Less than $10^{-4}$	None
10 to 300 mSv	$10^{-4}$ to $3 \times 10^{-3}$	Take simple countermeasures e.g. use house shielding
300 to 1,000 mSv	$3 \times 10^{-3}$ to $10^{-2}$	Consider evacuation of the public
Greater than 1,000 mSv	Greater than $10^{-2}$	Evacuate

\*Halve all figures in this column if the foetus is considered.

TABLE 4

## WORKING GUIDELINES FOR COUNTERMEASURES FOR IODINE-131 IN AIR

The working guidelines are derived from NH&MRC emergency radiation levels for inhalation of airborne iodine-131 by members of the general population, including children, following an accident.

Estimated radiation dose commitment to infant thyroid	Individual risk of major adverse somatic effect	Action
Less than 30 mSv	Less than $10^{-4}$	None
30 to 1,000 mSv	$10^{-4}$ to $3 \times 10^{-3}$	Consider issuing stable iodine tablets to the exposed population
1,000 to 3,000 mSv	$3 \times 10^{-3}$ to $10^{-2}$	Consider evacuating those persons at greatest risk, especially children
Greater than 3,000 mSv	Greater than $10^{-2}$	Evacuate the exposed population

**TABLE 5**  
**WORKING GUIDELINES FOR COUNTERMEASURES**  
**FOR IODINE-131 IN MILK SUPPLIES**

The working guidelines are derived from the NH&MRC emergency radiation levels for members of the general population, including children, who may consume milk produced from dairy pastures, contaminated with iodine-131 following an accident.

Concentration of iodine-131 in milk	Estimated radiation dose commitment to infant thyroid	Individual risk of major adverse somatic effect	Action
Less than 1 kBq L <sup>-1</sup>	Less than 30 mSv	Less than 10 <sup>-4</sup>	None
1 to 4 kBq L <sup>-1</sup>	30 to 100 mSv	10 <sup>-4</sup> to 3 x 10 <sup>-4</sup>	Consider controlling consumption of contaminated milk
Greater than 4 kBq L <sup>-1</sup>	Greater than 100 mSv	Greater than 3 x 10 <sup>-4</sup>	Control consumption of contaminated milk

**MEDIA RELATIONS**

1. The Manager, ANSTO Public Affairs is responsible, through the Director, Technical Secretariat, to the Executive Director, ANSTO for the provision of all media information. For the first six hours of an emergency with possible off-site consequences, he is the only source of information on both Commonwealth and NSW response activities. After that time, each organisation is responsible for media enquiries regarding their own involvement in the emergency : but only after consultation with their respective liaison officer at Lucas Heights (see paragraph 4).
2. Media releases and/or community announcements are to be disseminated via the Community Relations Office, NSW Police Headquarters under standing arrangements.
3. The Manager, ANSTO Public Affairs is to clear all media releases with the Chairman and/or the Executive Director. The Officer in Charge, Radiation Health Services, Department of Health, NSW is to clear any media release or community announcement concerning the health of the general public off-site.
4. The Manager, Public Affairs will be provided constantly with accident data by an ANSTO Corporate Affairs Officer, stationed in the Emergency Operations Control Centre (EOCC). A second Corporate Affairs Officer will be stationed in the Visitors' Reception and Information Centre to advise the Manager, Public Affairs of the arrival of media representatives, service the needs of NSW State liaison officers (Police, Health, SES) and set up the four officers. The Manager, Public Affairs (or his nominated alternative) will be based in the Public Information Facility (PIF) for the duration of the emergency.
5. It should be noted that all media interviews, background information, and press statements will be given in the Visitors' Reception and Information Centre.

## ACTIVATION : BUREAU OF METEOROLOGY (BUMET)

## DUTY FORECASTER (BUMET)

If a release of airborne contamination is imminent or likely to occur the ANSTO Duty Safety Coordinator will telephone the Bureau of Meteorology and give wind speed and direction (degrees and km/h). The Duty Forecaster will record these data and provide forecast data for the Lucas Heights area, using the following proforma:

Record data on proforma and provide immediate forecast of parameters below to ANSTO.

Send as shown in right hand column with blank spaces filled in with either NIL or:

- |  |  |
|--|--|
| (a) Present Gradient Wind  | ALPHA _____ DEGREES _____ km/h _____   |
| (b) Forecast Gradient Wind<br>(next 6 h)   | BRAVO _____ DEGREES _____ km/h _____   |
| (c) Imminent Wind Changes  | CHARLIE _____ DEGREES _____ km/h _____ |
| (d) Forecast Surface Wind<br>(next 6 h)  | DELTA _____ DEGREES _____ km/h _____   |
| (e) Forecast Precipitation<br>(indicate amounts next<br>6 h – showers, steady etc) | ECHO _____                             |
| (f) Sea Breeze Expected<br>(next 6 h)  | FOXTROT – ABOUT _____ hrs              |
| (g) Surface Inversion Expected<br>(next 6 h)                                       | GOLF – Strong/Slight/Nil               |

Contact ANSTO half to one hour later and confirm or revise forecast parameters.

Enter time, date etc on the proforma and mark "Attn WSR". Refer enquiries from media or public to ANSTO, 543 3999.

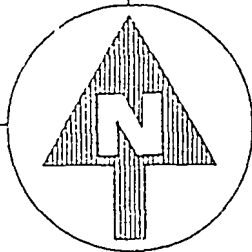
THE ROLE OF THE NSW STATE EMERGENCY SERVICES  
AND CIVIL DEFENCE ORGANISATION

1. NSW SES responses have been divided into three phases:
  - initial alert warning phase;
  - standby phase;
  - operational phase.
  
2. These are described in detail in Appendix 1 to this Annex.

ACTIVATION : NSW SES

INITIAL ALERT WARNING PHASE	STANDBY PHASE	OPERATIONAL PHASE
<p><b>During Working Hours.</b> The NSW SES HQ Duty Officer and/or the Sydney Southern Division SES Duty Officer will be provided with details of the nature and Class of the Accident by ANSTO, together with information on the off-site area which may be affected.</p> <p>1. The NSW SES HQ Duty Officer is to inform Senior NSW SES HQ staff and the Sydney Southern Division SES Controller.</p> <p>2. The Sydney Southern Division SES Duty Officer is to immediately contact the Sutherland SES Local Controller, and depending on the ANSTO briefing, instruct him to alert all relevant personnel, directing them to report to SES Local HQ, Mansfield Avenue, Caringbah.</p> <p><b>Outside Working Hours.</b> ANSTO will alert the NSW SES HQ and/or Sydney Southern Division Home Duty Officers who will in turn implement the procedures described above.</p>	<p>1. When directed by the Sydney Southern Division SES Controller, the Sutherland SES Local Controller is to:</p> <ul style="list-style-type: none"> <li>• despatch a briefed and experienced liaison officer in a radio-equipped car, to report to the Overall Controller at LHRL;</li> <li>• appoint a second liaison officer for subsequent despatch in a radio-equipped car, to report to the Police District Superintendent and tasked with the relay of Police requests for SES assistance to the Sutherland SES Local Controller.</li> </ul> <p>2. The SES Liaison Officer at LHRL is to relay ANSTO requests for SES assistance (which have been approved by the NSW Police Liaison Officer) to SES Local HQ Caringbah.</p> <p>3. When directed by the Police District Superintendent, the Sutherland SES Local Controller is to direct his Chief Warden Officer to implement the APTCARE Evacuation and Welfare Sub-Plan and to await instructions on the distribution of stable iodine tablets and/or evacuation of selected areas.</p>	<p>1. When directed by the Police, the Sutherland SES will assist with the distribution of prophylactic stable iodine tablets, supplied by the Department of Health, NSW, to members of the public throughout the area(s) nominated by that Department.</p> <p>2. When directed by the Police OCH, the Sutherland SES will assist the Police with the evacuation of the selected area(s) in accordance with the APTCARE Evacuation and Welfare Sub-Plan.</p> <p>3. Should requests exceed local SES resources, the Sutherland SES Local Controller is to request the allocation of further resources through Sydney Southern Division SES HQ.</p>

ANNEX E  
to APTCARE

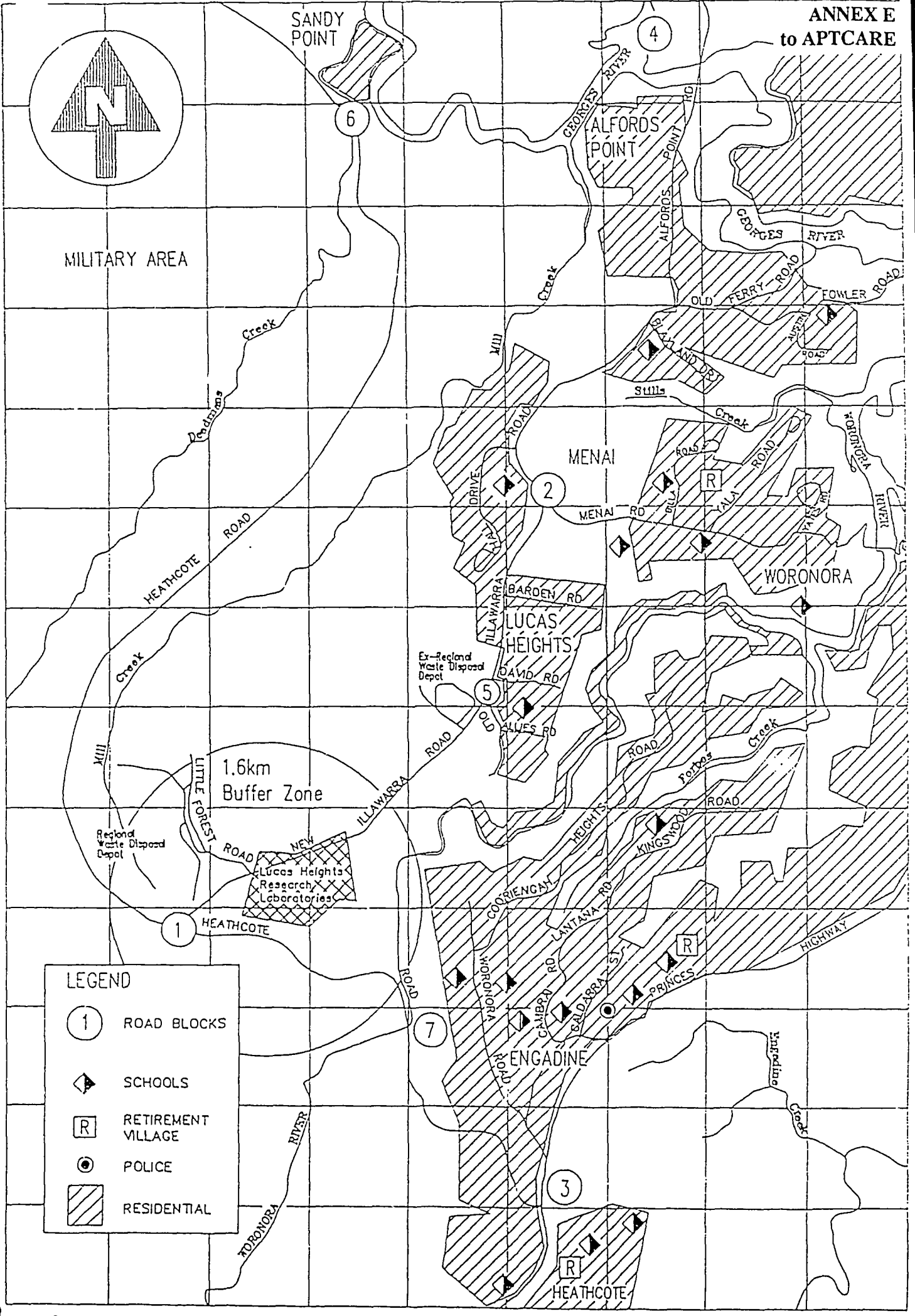


MILITARY AREA

1.6km Buffer Zone

**LEGEND**

- ① ROAD BLOCKS
- ◆ SCHOOLS
- R RETIREMENT VILLAGE
- POLICE
- ▨ RESIDENTIAL





## THE ROLE OF THE NSW POLICE DEPARTMENT

1. This Annex describes the assistance provided by the NSW Police Department in the event of an LHRL accident with potential for off-site consequences.

### Functions

2. With the declaration by the ANSTO Overall Controller of an accident with off-site consequences (Class A) the primary functions of the Police will be to:

- immediately close all roads leading to the LHRL;
- prevent unauthorised persons (including all media representatives) from entering the area;
- ensure the evacuation, as required, of all non-essential persons from the affected area;
- ensure uninterrupted movement of authorised and essential vehicles;
- distribute stable iodine tablets, when so advised by the ANSTO Overall Controller or the Officer in Charge, Radiation Health Services, to Police and other authorised personnel on duty in the hazard area;
- ensure that, as far as possible, Police on duty in the hazard area use radio-equipped Police vehicles at the intersections they are controlling until portable radios are available;
- ensure that sufficient Police are stationed in the area to protect vacated property;
- in conjunction with the Manager, ANSTO Public Affairs, disseminate media releases or community announcements.

### Operations

3. NSW Police operations are described in Appendix 1 to the Annex.

**APPENDIX 1  
to ANNEX F  
to APTCARE**

**ACTIVATION : NSW POLICE OPERATIONS**

ANSTO OVERALL CONTROLLER	DUTY OPERATIONS INSPECTOR (DOI), COMMUNICATIONS BRANCH	OIC POLICE NO. 24 DIVISION (SUTHERLAND)
<p>1. Advises nature and Class of Accident, the general off-site area likely to be affected and any other relevant information.</p> <p>2. If warranted, due to the possible presence of radioiodine hazards, requests the collection of stable iodine tablets for distribution to on-duty police and authorised personnel in the hazard area.</p>	<p>1. Advise OIC No. 24 Division of the accident.</p> <p>2. Advise senior personnel of No. 24 Division of the accident.</p> <p>3. Arrange for No. 24 Division personnel to deploy and control the following intersections:</p> <p>a. Junction of Heathcote and New Illawarra Road (1)</p> <p>b. Junction of Menai and Old Illawarra Road (2)</p> <p>c. Junction of Princes Highway and Heathcote Road (3)</p> <p>d. Junction of Alfords Point Road and Henry Lawson Drive (4)</p> <p>e. Junction of New Illawarra Road and David Road (5)</p> <p>f. Junction of Heathcote Road and St Georges Crescent (6)</p> <p>g. Junction of Heathcote Road and Woronora River Bridge (7)</p> <p>[Note: figures in brackets relate to circled intersections in Annex E.]</p> <p>4. Advise all personnel proceeding to the area of the nature of their duties and their responsibilities.</p> <p>5. Request No. 22 Division to implement traffic diversion plans at East Hills and Liverpool.</p> <p>6. Request No. 12 and 24 Divisions to commence launch patrols of the Georges and Woronora Rivers.</p> <p>7. Advise ALL Divisions concerned of the radio frequency channel to be used throughout the operation.</p> <p>a. Junction of Heathcote and New Illawarra Road (1)</p>	<p>1. Arrange immediate despatch of a senior police liaison officer to the LHRL; officer to be equipped with a portable radio capable of direct communication with the Police Command Centre.</p> <p>2. Arrange deployment of sufficient local personnel to secure the hazard area, augmented if necessary by units from Divisions 19, 22 and 31.</p> <p>3. Consider the need to establish one or more Forward Command Posts (FCP) and an Emergency Operations Centre (EOC).</p> <p>4. Decide on the location of the EOC in consultation with the ANSTO Overall Controller, selection of the LHRL site will be dependent upon contamination hazards. Consider using Sutherland Police Station as an alternative site.</p> <p>5. Decide on utilisation of mobile field control vans as either FCP or EOC.</p>

**THE ROLE OF THE NSW FIRE BRIGADE****1. Major Fire On-Site**

For fires at the LHRL, the NSW Fire Brigade Control is to be alerted. Initial responses are to be made by Menai, Engadine, Sutherland, Miranda, Kogarah, Riverwood and Revesby stations or as determined by Control.

Attending officers are to be advised of hazardous materials and of any protective measures to be adopted. ANSTO is to provide protective clothing, equipment and if necessary, prophylactic stable iodine tablets.

**2. Decontamination**

Guided and provided with any necessary personal protective equipment and techniques by officers of the Department of Health, NSW, the NSW Fire Brigade is to carry out decontamination of identified off-site roads and adjacent areas as directed by the NSW Police.

## THE ROLE OF THE DEPARTMENT OF HEALTH, NSW

In the event of an accident at LHRL which could affect the health of the general public in the local area, the Department of Health, NSW is to provide the following assistance.

### 1. Staff

Staff of the Radiation Health Services are to be immediately despatched to the LHRL for liaison with ANSTO in the determination of such radiological and/or toxicological protection measures necessary to safeguard the health of NSW citizens. The Department is to identify and brief additional back-up State Health personnel sufficient to respond to a situation beyond the staff capacity of the Radiation Health Services.

### 2. Laboratories

The Lidcombe laboratories of the Radiation Health Services will be available for radiological analyses and measurements necessary to assess the consequences to NSW of the LHRL accident. The laboratories:

- are to be available for use as an independent audit of ANSTO measurements, particularly where such measurements are made to assess the effects on the public;
- are to be used if LHRL facilities are so contaminated as to be incapable of accurate radiological measurement.

### 3. Radiation Monitoring

The Radiation Health Services will be responsible for the issue and subsequent assessment of personnel monitoring devices for all non-LHRL operational personnel. Should ANSTO's personnel dosimetry service be put out of action, the Radiation Health Services' facilities are to be made available.

The Radiation Health Services will provide mobile radiation monitoring teams to augment the ANSTO monitoring teams.

### 4. Implementation

On receipt of advice from the LHRL of an accident with off-site effects (Class A), an officer of the Radiation Health Services is to be immediately despatched to the LHRL as the Officer in Charge, Radiation Health Services. In liaising with ANSTO, he is to be empowered to call on ALL Department of Health, NSW resources if required.

He will be provided with full details and supporting specialist advice by ANSTO on the radiological and toxicological threat, from which he is responsible to decide:

- if and when the distribution of prophylactic stable iodine tablets is required;
- if and when, and from where, an evacuation is required;
- the risk to the food chain and the immediate measures needed to determine which contaminated foodstuffs are unsuitable for consumption.

ACTIVATION : ANSTO STAFF ACTIONS AND RESPONSIBILITIES

DSS OR SRO (SILENT HOURS)	DUTY SAFETY COORDINATOR (DSC)	OVERALL CONTROLLER	LOCAL CONTROLLER	SAFETY CONTROL OFFICER (SCO)	SUPERVISING OFFICER OF THE AREA	BUILDING WARDEN (CONTAMINATION)	BUILDING WARDEN (FIRE)
<p>1. Directs EAM to call in the DSC and alert an Overall Controller and the Local Controller.</p> <p>2. Ensure deployment of available on-site staff to implement initial control measures.</p> <p>3. Takes control of accident until relieved by the DSC or Overall Controller.</p>	<p>1. Proceed to the EAC and assume command until relieved by the Overall Controller.</p> <p>2. Activate the EOCC.</p> <p>3. Call in the Overall Controller, appropriate Local Controller and Emergency Team(s) as warranted.</p> <p>4. Coordinate surveys, personnel dosimetry, environmental monitoring. Arrange for any additional facilities (monitoring equipment, respiratory protection, protective clothing).</p>	<p>1. Proceed to the EOCC and relieve the DSC of command.</p> <p>2. Initiate all necessary emergency procedures.</p> <p>3. Direct the transmission of emergency details (a situation report) to:</p> <ul style="list-style-type: none"> <li>• Chairman, ANSTO;</li> <li>• Executive Director, ANSTO;</li> <li>• Director, Occupational Health and Safety, ANSTO;</li> <li>• Controller, Site Information Services Department.</li> </ul> <p>4. Authorise media releases in accordance with Annex B.</p>	<p>1. When directed by the DSC or Overall Controller, arrange immediate evacuation of the accident area and implementation of effective control of access to the area by all means including personnel, barriers and warning signs.</p> <p>2. Implement such countermeasures as may be directed by the Overall Controller.</p> <p>3. Maintain continuous communications with the EAC/EOCC as appropriate, until cessation of the emergency.</p>	<p>1. Set up and man the accident area's safety control point.</p> <p>2. Provide continuous advice to the Local Controller on health and safety aspects of the emergency.</p> <p>3. Control all health physics and safety surveys in the accident area.</p> <p>4. Assess radiation and other hazards in the accident area; implementing such controls as may be practicable.</p> <p>5. Transmit continuous relevant information to the DSC.</p>	<p>1. In initial stages of an emergency during normal working hours, take control of the accident area until relieved by the Local Controller.</p> <p>2. Ensure:</p> <ul style="list-style-type: none"> <li>• evacuation of the area, if necessary;</li> <li>• erection of barriers and warning signs;</li> <li>• posting of personnel to control access to the accident site.</li> </ul> <p>3. Alert the EAC/EOCC.</p> <p>4. Contact the first available Occupational Health and Safety officer.</p> <p>5. Implement stringent monitoring of in-area personnel before permitting any egress.</p>	<p>1. During normal working hours and a site emergency involving potential widespread contamination, ensure that:</p> <ul style="list-style-type: none"> <li>a. personnel are assembled in the safest area of the building, clear of contaminated or otherwise affected areas;</li> <li>b. personnel remain in the building and under control;</li> <li>c. the building is sealed, as far as practicable, from atmosphere;</li> <li>d. there is no hindrance to emergency teams;</li> <li>e. no telephones are used, other than for official emergency calls;</li> <li>f. the nominated emergency telephone is manned continuously;</li> </ul>	<p>During normal working hours and a site emergency involving fire, ensure that:</p> <ul style="list-style-type: none"> <li>a. the EAC/EOCC is advised of a FIRE in the building;</li> <li>b. all staff not involved in the emergency are evacuated by the safest route;</li> <li>c. a full building check is conducted to ensure that evacuation has been effected; and</li> <li>d. names of all evacuees are obtained from the Supervising Officer of the Area and the Local Controller is advised immediately of details of any staff not accounted for.</li> </ul>

## ANNEX I CONT'D

DSS OR SRO (SILENT HOURS)	DUTY SAFETY COORDINATOR (DSC)	OVERALL CONTROLLER	LOCAL CONTROLLER	SAFETY CONTROL OFFICER (SCO)	SUPERVISING OFFICER OF THE AREA	BUILDING WARDEN (CONTAMINATION)	BUILDING WARDEN (FIRE)
	<p>5. Alert additional services (personnel dosimetry, monitoring instruments supply, environmental survey, fire and industrial safety services, medical services, decontamination services).</p> <p>6. Call in necessary extra specialist staff.</p> <p>7. Collate and analyse radiation survey reports and other information from all sources and advise the Overall Controller accordingly on the health and safety aspects of the emergency.</p>	<p>5. Direct such evacuation procedures as may be required on-site.</p> <p>6. Declaration of the Class of Accident and Hazard Duration.</p> <p>7. Direct immediate notification of all appropriate NSW Authorities.</p> <p>8. Advise the Duty Operations Inspector (DOI), NSW Police, of the nature and Class of Accident, the general off-site area likely to be affected and any other relevant information.</p> <p>9. Where off-site radioiodine hazards exist, request the DOI to arrange collection as soon as possible, of stable iodine tablets for distribution to police and authorised on-duty personnel in the hazard area.</p>			<p>6. Authorise and implement emergency evacuation of personnel from the accident area in the case of injury where radiation levels dictate such action; or where air contamination levels dictate the use of respiratory protection equipment.</p> <p>7. Remain in control until relieved by the Local Controller.</p>	<p>g. contaminated personnel are segregated and their status relayed to the nearest health physics office;</p> <p>h. the appropriate Building Warden is advised when personnel from his/her building have taken up temporary shelter elsewhere; and</p> <p>i. names of all evacuees are obtained from the Supervising Officer of the Area and the Local Controller is advised immediately of details of any staff not accounted for.</p>	

INCIDENT CHECK LIST

LOCATION	
DESCRIPTION	
CLASS	A HAZARD WITHIN AND BEYOND 1.6 km B NO OFF-SITE HAZARD
LIKELY DURATION	LONG _____ DAYS INTERMEDIATE _____ HOURS SHORT _____ MINUTES

PERSONNEL INVOLVED	NO.	TIME
At scene of incident		
Not accounted for		
Contaminated		
Irradiated		
Injured		

PERSONS NOTIFIED	TIME
Area Safety Officer	
Director, Occupational Health and Safety	
Duty Safety Coordinator	
Overall Controller	
Executive Director, ANSTO	
Deputy Director	
Controller, Information Services	
Area Supervisor	
Program Director, Affected Area	
Section Leader	

OFF SITE SUPPORT ALERTED	TIME
NSW Police	
State Emergency Services	
Department of Health, NSW	
NSW Fire Brigade	
NSW Ambulance Service	
Other	

COMMUNICATIONS ESTABLISHED	TIME
VHF Radio	
UHF Radio	
Telephones (Fixed)	
Telephones (Field)	
Runner	
Loud Hailer/Other	

CONTROL ACTION	TIME
Area evacuated	
Persons evacuated to .....	
Incident control point estab. at .....	
Area Supervisor (.....) present	
HP Control Officer (.....) nominated	
Area Safety Officer (.....) available	
HP Surveyors (.....) available	
Radiation surveys initiated	
Surface contam. surveys initiated	
Air contam. surveys initiated	
Personnel monitoring initiated	
Medical assistance available	
Decontamination effort available	
Effluent disposal arranged	
Maintenance/repair effort arranged	
Road blocks estab. at .....	
Countermeasures taken: KI/Shelter/Evac.	

SUPPORT TEAMS ALERTED	TIME
Health physics monitoring	
Environmental survey	
Personnel dosimetry (internal)	
Personnel dosimetry (external)	
Medical	
Meteorology	
Decontamination	
Waste disposal	
Transport	
Maintenance	

ENVIRONMENTAL PROGRAM	TIME
Wind speed)	
Wind direction	
Precipitation	
Air monitoring	
Ground monitoring	
River monitoring	
Grass	
Milk	
Vegetables	

VEHICLES IN ATTENDANCE	CALL	TIME
Emergency Tender		
4 Wheel Drive		
4 Wheel Drive		
4 Wheel Drive		
Utility		
Fire Tender		
Mobile Laboratory		
Other		

CHECKED BY:	
DATE:	TIME:
SENT TO:	