ANNEX IV

1. CRERMA - Collaborating Centre for Radiation Emergency Response and Medical Assistance (Buenos Aires, Argentina, Director - Chief Eng. J. Skvarca)

In March 1990 the Department of Radiation Physics of the Ministry of Health of Argentina was officially designated as the WHO Collaboration Centre for Radiation Emergencies, Medical Preparedness and Assistance (REMPAN).

The point of contact for this Centre is the Department of Radiation Health Physics, Department of Medical and Sanitary Equipment, Ministry of Health and Welfare of Argentina.

The Centre is based on the existing structures of two institutions responsible by law for ionizing radiation in Argentina, and the hospital facilities in Buenos Aires.

a) **Ministry of Health** which, through its Radiation Health Physics Department on the National level (Federal System) and its similar divisions in the provinces, is responsible for X-ray sources and linear accelerators (protection, training, licensing etc.)

This Department is supported by a permanent advisory commitee (CTARI) on ionizing radiation at a National level.

In October 1994 National Atomic Energy Commission splits in three new institutions: ENTE NACIONAL REGULADOR NUCLEAR (ENREN), NUCLEOELECTRICA ARGENTINA S.A. (NASA) and COMISION NACIONAL DE ENERGIA ATOMICA (CNEA)

b) **National Atomic Energy Commission (CNEA)** which is responsible for training and research as well as quality assurance and control of medical, industrial and nuclear power use of radiactive material.

c) **National Regulatory Nuclear Commitee** - (ENREN, ENTE NACIONAL REGULADOR NUCLEAR) is today responsible at the National level on regulations, safety, protection and licensing of all radiactive meterials and nuclear plants, as relevant-sources of ionizing radiation.

These organizations work very closely together. In 1984 the institutions, together with the Municipality of the City of Buenos Aires which coordinates the Civil Defense for the entire country, agreed by a special convention to establish a system called **SAMARI** (System for Medical Preparedness and Assistance to Persons Overexposed from Ionizing Radiation). This agreement covers three important items:

a) Distribution of duties in response to a radiation accident, including assignment for radiological emergency facilities and equipment,

b) Elaboration of emergency plans for a radiation accident, which should describe its typical features and measurements to be taken;

c) Identification of the experts and hospital facilities for preparedness and response

The National Atomic Energy Commission and National Regulatory Nuclear Commitee have the capability to provide physical reconstruction of the accident, means of decontamination, instrumentarion, including whole-body counter units, stationary and mobile laboratories for environmental measurements and biologycal dosimetry.

At the begining of the next year there will be officially created the Institute of Medicine, Radiomedicine and Safety (INSTITUTO DE MEDICINA RADIOMEDICINA y SEGURIDAD-IMERASE S R.L.) wich will provide the medical assistance to overexposed persons.

The Ministry of Health will coordinate the hospital facilities. There are two general hospitals in Buenos Aires having special sterile rooms and other facilities such as a unit for treatment of burns. The Ministry also provides the National Emergency Communication and Transportation Network (DINES) which has representatives in all provinces

At the international level, particularly for countries in Latin America, we have a strong and fast contact in coordination and cooperation in this field through the Programme of HSD of PAN AMERICAN HEALTH ORGANIZATION (PAHO) from Washington (Regional Adviser in Radiological Health)

The work in recent years specially in 1995, has been directed to the following aims:

1) To consolidate activities among the different components of the Collaborating Centre (CNEA, ENREN, MCBA, and Ministerio de Salud).

2) To establish technical and administrative contacts with relevant institutions in Latin America. (IPEN-PERU, CIN-URUGUAY, DPR-PARAGUAY and DPR-CHILE).

3) To support with expertise international training courses in radiation emergency preparedness and management (Toluca, Mexico - January 1990; Buenos Aires, Argentina - August 1991 and 1992, Asunción, Paraguay 1991)

4) To provide technical assistance to Spanish-speaking countries in Latin America (elaboration and improvement of the national legislation on radiation protection including preparedness for radiation emergencies).

5) To exchange technical documentation with other collaborating centres.

6) To render assistance in radiation accidents such as in San Salvador (San Salvador) and in Santa Cruz (Bolivia).

7) To participate in international coordination meetings of WHO Collaborating Centres on radiation emergency.

8) To carry out a research project on the correlation of physical dosimetry with biological indicators of radiation sickness in primates (rhesus).

The biological indicators considered in the above-mentioned project are cytological indices (peripheral blood and bone marrow), free radical induction in bone and teeth measures by electron spin resonance techniques, biochemical changes (raurine concentration in serum and amilase activity in saliva), immunologycal tests (T and B lymphocyte count, immunoglobulin and antibody production in vitro) The full description is available in Spanish.

There were two major radiation accidents in Argentina. One occurred in 1968 at a ^{137}Cs industrial source. The other one took place in 1983 at a small nuclear research reactor and the exposed worker died after 48 hours. A minor accident happened over 12 years ago with a ^{60}Co therapy unit when the physician lost some of his fingers.

In improving the medical preparedness for radiation emergencies an important step has been the establishment of a regional network, based usually on Regional Hospitals of different Provinces in Argentina to involve all the country in coordination with the National Collaborating Centre. Special questionnaires were developed for hospitals to facilitate the triage as well as the training courses for physicians took place. At the international level mostly in South America, the Centre is officially in touch with health authorities from Paraguay-Departamento Proteccion Radiologica y Seguridad Nuclear, Uruguay-Centro Investigaciones Nucleares-CIN, Perú-Instituto Peruano de Energía Nuclear-IPEN and INSTITUTO de SALUD PUBLICA de CHILE, Sección Radiaciones Ionizantes, in order to establish liaison institutions in REMPAN with these countries in conjunction with PAHO-Washington DC We have officially request from Chile, Paraguay, Perú and Uruguay

SAMARI is also developing educational and training programmes for our regional centres (Provinces) in 1995 and 1996, including exercises for emergency preparedness plans

The Centre is also preparing data to be input into an INTERNATIONAL COMPUTER DATABASE FOR CLINICAL CASE HISTORIES OF PERSONS ACCIDENTALLY EXPOSED TO IONIZING RADIATION, and to be adapted to spanish language.

Particular attention is paid to personal contacts among the responsible persons of the Centres belonging to REMPAN. This contributes to the spirit of cooperation which is so important in emergency situations

The points of contact and correspondence:

J. Skvarca
Director, Department of Health Physics
Department of Medical and Sanitary Equipment
P O. Box 3268 C. Central 1000
Buenos Aires, Argentina

Tel: 54 (1) 381 0971
Tlx: 25064 COOPRE AR
Fax: 54 (1) 381 0971 or 382 5680

2. CRPREMA - Collaborating Centre for Radiation Protection and Radiation Emergency Medical Assistance (Melbourne, Victoria, Australia, Director - Dr K.H. Lokan)

Dr Stephen B Solomon
Australian Radiation Laboratory

Dr Roslyn Drummond
Peter MacCallum Cancer Institute

ARL was designated a WHO Collaborating Centre for Radiation Protection in 1985. In 1989, the laboratory was redesignated jointly with the Peter MacCallum Cancer Institute as a CRPREMA.

The Terms of Reference of the CRPREMA are;

- help in developing radiation protection standards and codes of practice for the safe and effective use of radiation
- to provide technical advice and to organize personnel training in radiation health when needed
- define optimal methods for diagnosis and treatment of overexposure
- help Member states in elaborating their plans for medical preparedness and first aid
  promote training of personnel in developing countries in medical preparedness and first aid
- provide medical assistance to exposed persons, both on site and in specialized clinics, subject to bilateral agreement between Australia and country(s) involved
- help in developing radioactivity environmental monitoring in the Region
- disseminate on a regional basis information on radiation health
- participate in the regional dosimetry intercomparison programme

Summary of Activities During 1995

Since the last REMPAN meeting in Paris, the CRPREMA has been active in a range of area.

- Regional Training and Assistance

- the laboratory help to organise an IAEA Regional Workshop on Offsite Planning and Countermeasures for Radiological Emergencies, September 1994

- the laboratory is organising an IAEA Regional Seminar on Education and Training in Radiation Protection and Nuclear Safety for November 1995

- Peter Burns, Head of the Section Scientific Services, spent 2 weeks in Thailand instructing regulatory staff as part of an IAEA RCA Programme "Strengthening Radiation Protection Infrastructure"

- Environmental Programmes

- provision of data from the Australia-wide monitoring network to GERMON continues

- ARL is hosting a prototype radionuclide monitoring station for the US DOE. This is part of an international atmospheric monitoring system for Nuclear Test Ban Treaty, under negotiation in Geneva.

- Intercomparison Activities

- with JAERI, NRL and ARL, in conjunction with the IAEA, are conducting an intercomparison of personal monitoring services in the Asia/Pacific region

- ARL and NPL are in the process of performing an intercomparison at linac energies (up to 19 MV)) of their calibration for adsorbed dose of therapy ionisation chambers.

- as a Regional Radon Reference Facility, ARL participated in a meeting of the IAEA / EU International Radon Metrology Programme, held in Montreal, Canada, June 1995.

- Laboratory facilities

- the Whole Body Monitoring Facility at ARL has been upgraded with the addition of a high-resolution gamma spectroscopy system for lung monitoring

- Radiation Emergency Response

- recent developments in this area are discussed in more detail in the following sections.

CRPREMA Emergency Response

It is not possible to provide effective radiation emergency medical assistance and radiation protection support to other countries within the Region without firstly establishing effective protocols and operations within Australia. An internal restructuring of staffing and facilities within ARL, and the increased participation by the medical staff at the Peter MacCallum Institute has prompted a re-examination of aspects of this role of the CRPERMA. This work has concentrated on the provision of a more effective radiation emergency response by ARL, both within Australia and within the Region and in the review of medical emergency response by authorities within Australia.

In the Australian context, there are presently three potential reactor-based radiation emergency scenarios;

- radiation accidents associated with visiting Nuclear Powered warships,
- emergencies associated with re-entry of Nuclear Powered Satellites and
- radiation accidents associated with the research reactors at the Australian Nuclear Science and Technology Organisation, Sydney

ARL has formal commitments to providing assistance for the first two of these scenarios, in the form of Health Physics Advisors, Health Physics teams, environmental sampling and the provision of personal radiation monitors. The coordination of this emergency response is the responsibility of Emergency Management Australia (EMA) and the Australian Department of Defence

The initial response to other types of radiation accidents and incidents is the responsibility of the appropriate State authority. ARL is operated by the Federal Department of Community Services and Health, and can be called upon to provide health physics teams and medical advisors on request.

There is a need to provide an effective and rapid radiation emergency response, commensurate with the low probability of most scenarios. Much of this work has involved the improvement of communication links. As of November this year, 24 hour access will be available for health physics and medical assistance. Within Australia, request for assistance by the individual State authorities will be directed through the national body responsible for coordinating disaster planning (EMA) EMA would immediately direct these requests to the Duty Scientific Coordinator at ARL who has the responsibility for organising the call out of Health Physics Advisors, Medical Advisors and Health Physics Teams. ARL has radiation protection and monitoring equipment for up to six teams, but in view of the low probability of radiation emergency, only a single team will be on immediate (2-3 hour) call. The remaining teams could be mobilised within 24 hours of the initial call for assistance. Requests for assistance from international organisations (WHO and IAEA) would be made directly to the Duty Scientific Coordinator.

Following a training Course on Medical Planning and Care in Radiation Accident, held at the Peter MacCallum Cancer Institute in 1990, training notes and videos were produced and distributed to the various state authorities. A preliminary review of medical response by State authorities has shown that a number of States have formal plans in place, but there is a major need to re-examine present plans and to provide training for hospital staff involved in these radiation accident plans.

Plans for Coming Year

- To work with the State authorities to ensure consistent and effective radiation emergency medical response across Australia
- To extend the experience gained in the establishment of these plans to the provision of radiation emergency assistance to requesting countries within the region
- To organise the training of health physics teams for radiation emergency response
- To organise the training of medical staff designated by the States as responsible for providing radiation emergency medical response
- To work on the upgrading of the Australian Radiation Accident Register

As a prerequisite to carrying out these tasks, it will be necessary to ensure that the knowledge and experience available through the network of WHO Collaborating Centres is channelled into providing effective radiation protection and emergency medical response, both within Australia and within the Region.

CRPREMA - Collaborating Centre for Radiation Protection and Radiation Emergency Medical Assistance Melbourne, Victoria, Australia

Points of Contact

Radiation Emergency Response

Duty Scientific Coordinator
Tel: +61 419 365 263 (24hr)
Fax: +61 3 9434 4153
E-mail: radprot@arl.oz.au

Participating Organisations

Australian Radiation Laboratory
Lower Plenty Road
Yallambie,
Victoria, Australia, 3085

Director — Dr K.H. Lokan
Tel: +61 3 9433 2211
Tel: +61 3 9836 9436 (Home)
Fax: +61 3 9432 1835
E-mail: arl@arl.oz.au

CRPREMA Coordinator (Leader, Health Physics Group) — Dr S.B. Solomon
Tel: +61 3 9433 2238
Tel: +61 3 9437 1909 (Home)
Fax: +61 3 9432 1835
E-mail: stephen@arl.oz.au
airrad@world.net

Peter MacCallum Cancer Institute
MacArthur Place
East Melbourne
Victoria, Australia,

Director — Dr J. Morris
Tel: +61 3 9656 1111
Fax: +61 3 9656 1424

CRPREMA Coordinator (Deputy Director Radiation Oncology) — Dr R Drummond
Tel: +61 3 9656 1111
Fax: +61 3 9656 1424

3. CRPMPRA - Collaborating Centre on Radiation Protection and Medical Preparedness for Radiation Accidents (Rio de Janeiro, Brazil, Coordinator - Dr Eliana Amaral)

Carlos A N. Oliveira, Ph.D.
Institute of Radiation Protection and Dosimetry
Rio de Janeiro, Brazil

3.1 Introduction

The Brazilian WHO Collaborating Centre on Radiation Protection and Medical Preparedness for Radiation Accidents is based on the existing structure of the Institute of Radiation Protection and Dosimetry, IRD, from the National Nuclear Energy Commission, CNEN, in collaboration with the National Cancer Institute, Furnas Centrais Elétricas (Electric Power Utility, the owner of the nuclear power plant), Brazilian Nuclear Industry and the Laboratory of Radiological Sciences from the Rio de Janeiro State University, including the Pedro Ernesto Hospital.

Under nuclear accident conditions or in case of a possible radiological emergency, the emergency coordination and evaluation team of CNEN is actioned to confirm the emergency and to mobilize the IRD emergency team responsible for the radiation protection and dosimetry response. To accomplish this task, the IRD has an emergency assistance service, SAER, responsible for the maintenance of the response system, including emergency workers kept on call 24 hours a day Figure 1 illustrates the WHO Collaborating Centre organization.

In case of victims with potential individual exposure and/or contamination, medical doctors specialized in radiation medicine will also be called, starting the medical emergency response. The coordination of the medical response to radiation accidents has been handed over to the Reference Centre for the Evaluation and Assistance of Radiation Victims (CRAAR) of the Laboratory of Radiological Sciences (LCR). A three level response medical plan for radiation accidents has been proposed for use on a nationwide basis. Figure 2 shows, in detail, the interfaces and activities carried out by Radiological Protection and Medical Response Teams. This structure will constitute the backbone of the National System for Medical Assistance for Radiation Emergencies (SNAER) and is now under evaluation at the Health Ministry.

3.2 National system for medical assistance for ionizing radiation accidents (SNAER)

3 2.1 Organization

The system will be constituted by 3 distinct levels of response, according to the degree of complexity, with respect to the necessary resources for assistance and the seriousness of the consequences manifested due to accidental exposure to ionizing radiation and other concomitant accident conditions.

1) First Level (Local Level)

It includes conventional and specific pre-hospital assistance in case of radioactive contamination. It is provided at the scenario (such as a public road) or nearby (such as health services of an industry) by first aid organization members such as Civil Defense, Fire Brigade and others, as well as occupational health personnel.

2) Second Level (Loco-Regional Level)

It includes hospital assistance in the closest unit from the incident (designated hospital). The designated hospital provides internal and external radioactive decontamination, as well as assistance on associated traumatic and accident conditions (fractures, chemical or thermic burns ..)

3) Third Level (National Reference Centers)

The National Reference Centers provides specialized assistance to victims with acute radiation syndrome or serious radiological injuries of the skin.

3.2.2 Scope

The System is intended for use on a nationwide basis and must be implemented in every Federation unit.

3.2.3 Attributions

The Municipal and State Health Secretariats will indicate the loco-regional hospitals of the Health System which will constitute the "designated hospitals", taking into account the localization of radiation sources and respective potential for accidents, according to the National Nuclear Energy Commission (CNEN). The Health Ministry will indicate national reference centers for the third level assistance of radiation victims.

3 2.4 Delegations

The following institutions will have specific delegations:

1) Institute of Radiation Protection and Dosimetry from the CNEN·

   a) To coordinate the activities in the field of radiological protection with individuals assisted in every level of the system;

   b) To perform radiological monitoring of individuals assisted in every level of the system, by means of trained personnel and laboratories;

   c) To keep all levels of the system informed concerning radiological monitoring of individuals assisted;

   d) To give technical support in the field of radiological protection to all levels of the system;

   e) To provide training on radiological protection, in order to capacitate personnel in every level of the system.

2) Laboratory of Radiological Sciences and its Reference Center for the Evaluation and Assistance of Radiation Victims at the Rio de Janeiro State University:

   a) To coordinate the reference and counter-reference of radiation victims among different levels of assistance;

   b) To provide assistance for radiation victims by trained professionals, whenever necessary and requested, in any level of assistance;

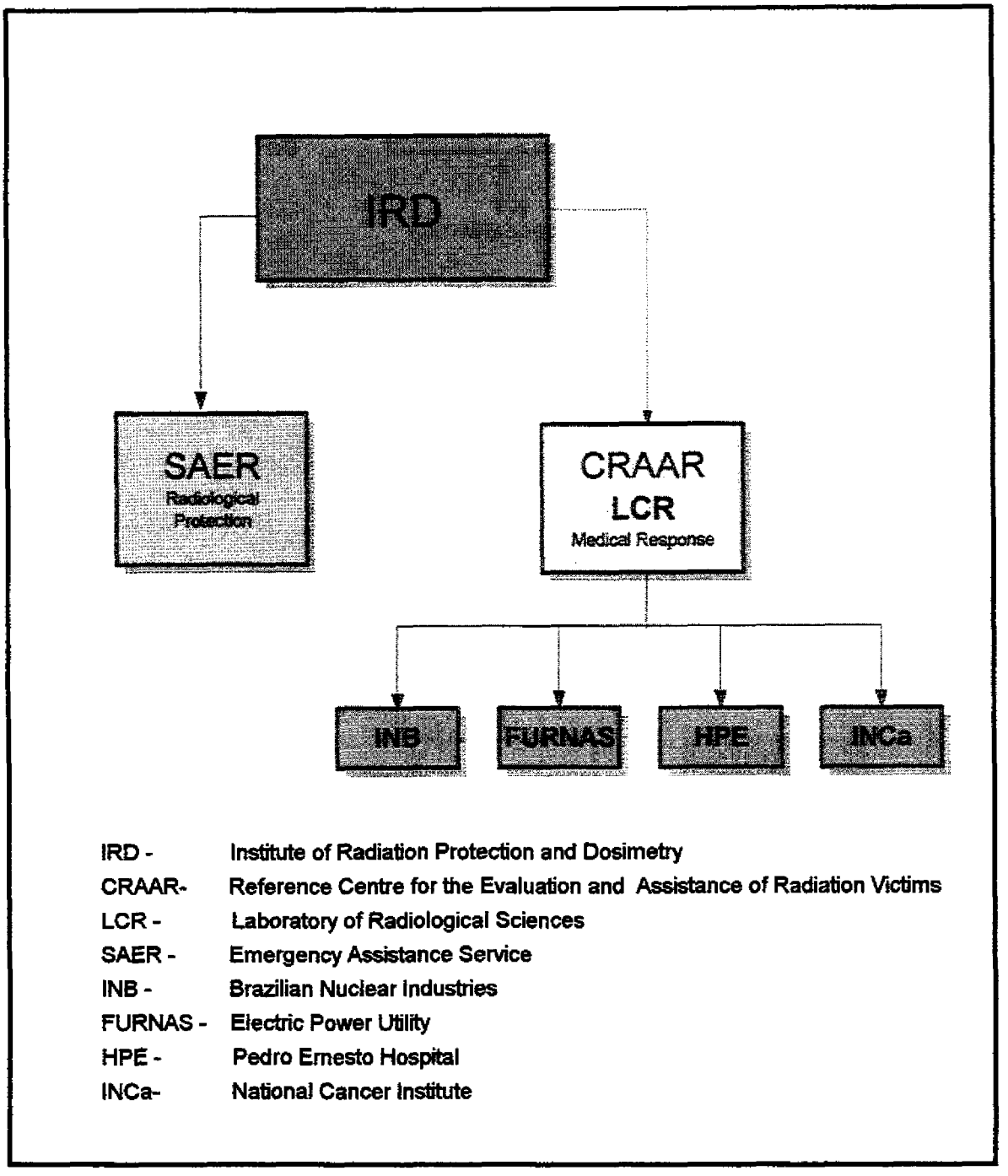
   c) To maintain and distribute chelating or ionic change medicines for treatment of internal radioactive contamination (DTPA, Prussian Blue, Potassium Iodide) in local designated hospitals, under the coordination of their medical doctors;

   d) To give specialized support, in any level of assistance for medical decontamination of individuals with internal or external radioactive contamination;

   e) To provide training of personnel for assistance in any level of the system;

3) National Cancer Institute (Cancer Hospital/Bone Marrow Transplant Center) and Pedro Ernesto Hospital at the Rio de Janeiro State University:

   a) To constitute national reference centers for third level assistance of radiation victims.



IRD - Institute of Radiation Protection and Dosimetry
CRAAR- Reference Centre for the Evaluation and Assistance of Radiation Victims
LCR - Laboratory of Radiological Sciences
SAER - Emergency Assistance Service
INB - Brazilian Nuclear Industries
FURNAS - Electric Power Utility
HPE - Pedro Ernesto Hospital
INCa- National Cancer Institute

Figure 1- Brazilian WHO Collaborating Centre Organization

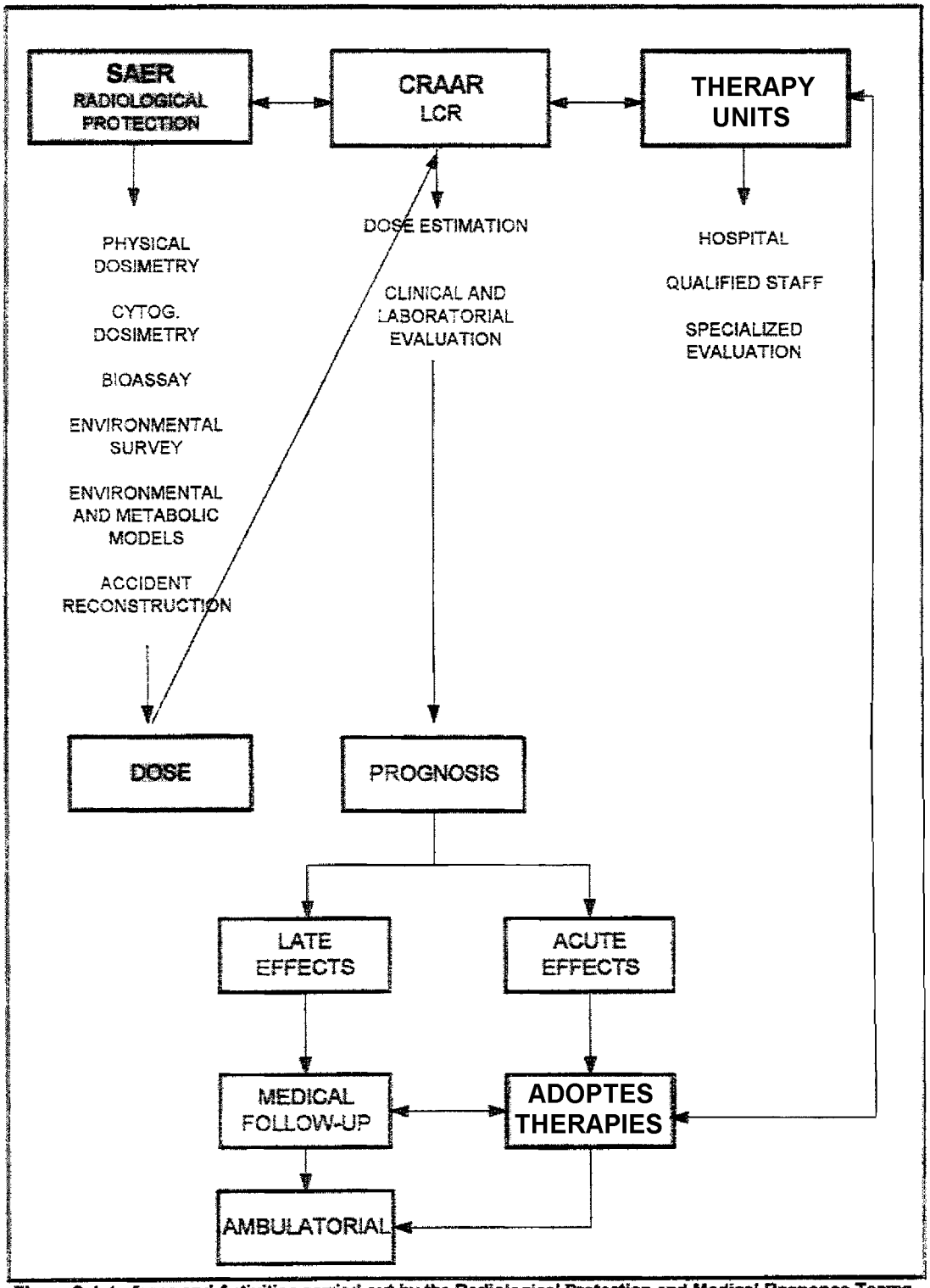


Figure 2- Interfaces and Activities carried out by the Radiological Protection and Medical Response Teams

4. ICCR - International Collaborating Centre of Radiopathology (Fontenay-aux-Roses, France, President - Dr H.P. Jammet)

4.1 Introduction

The International Centre of Radiopathology (ICR) was set up in 1985 for the purposes of research, education and intervention in radiation-induced illnesses. It has carried on the work performed since 1956 by the Institut Curie and the Atomic Energy Commission. It is a WHO collaborating centre for Radiopathology in relation to ionising and non-ionising radiation.

4.2 New activities of the International Centre of Radiopathology (ICR)

4.2.1 As regards ionising radiation, the main focus has been on the prevention andtreatment of cutaneous burns and pulmonary fibrosis. Experimental and clinical research has been carried out, particularly for enzymotherapy. Interesting results have been obtained especially through the appropriate use of Superoxydismutasis.

4.2.2 Where non-ionising radiation is concerned, research is being furthered on the effects of ultra-violet rays A and B on the one hand, and ocular lesions due to lasers, on the other. The comparison of the ultra-violet rays A and B related to early cutaneous effects (erythema, pigmentation) and the induction of skin cancers Skin radiosensitivity indices to ultra-violet rays A and B have been established. Ocular lesions due to lasers have been studied with a view to classifying the risks of the different types of laser, particularly pulsed lasers.

4.3 Overview of the national medical preparedness system in the event of a nuclear accident

4.3.1 In order to deal with the consequences of a nuclear accident, the International Centre of Radiopathology (ICR) has set up an operational network, made available to the Competent Authorities and managed by the Office for Protection against Ionising Radiation (OPRI). This network encompasses on the one hand, the main civil hospitals (Paris, Lyon, Marseille. .) and all of the military hospitals specialised in problems related to radiation accidents on the other

4.3 2 The use of this network takes account of the relative classifications of accident situations, of victims' diseases and of the different forms of intervention.

1) Accident situations relate to radiological, nuclear and transport accidents

Radiological accidents are linked to medical and industrial usages, and research either into what generates radiation (x-rays and accelerators) or radioactive sources (lost or stolen).

Nuclear accidents include minor accidents concerning certain workers and major accidents, involving not only workers but civil populations in particular. Accidents during the transport of radioactive substances mainly relate to small sources.

2) The classification of victims takes account of the conditions of exposure to radiation and of the different ent typesradiopathological diseases. As regards conditions of exposure, an important distinction is made between patients who have only incurred total or partial external radiation and those who have been subject to external or internal radioactive contamination

The different types of radiopathological diseases must be taken into consideration with a view to the admission for treatment of patients. Acute radiation syndromes (ARS) are classified according to the degree of gravity: haematological, gastro-intestinal, pulmonary and neurological. Radiological burns form a heterogeneous group where, for therapeutic indications, localised or extensive superficial burns, localised deep burns and the special case of hand burns must be distinguished from each other.

A strict distinction must be drawn between radioactive contamination which is only an external cutaneous contamination and that involving an absorption of radioactive substances with highly varying points of entry and metabolisms.

3) Interventions are to be envisaged in the technical, health and medical fields

Technical interventions relate to the sources, in particular the sources used in industrial gammagraphy, in radiotherapy and in nuclear medicine. Health interventions concern populations where the persons involved in the accident, those actually exposed and those who are victims of radiopathological diseases should be distinguished from each other. Medical interventions are mainly based on the distinction between emergency cases (irreversible aplasias, extensive burns and severe contamination) and non-emergency cases (external contamination, localised burns, reversible aplasias).

4 4 Preparedness is organised in the health and medical fields

4.4.1 Health field

In the health field, preparedness is based on intervention plans and an organisation of the civil and military resources which can be mobilised:

Intervention plans are either on-site or off-site

On-site intervention is planned according to internal emergency plans (IEP) which envisage the scale of gravity and provide initial aid and triage and treatment areas. Off-site intervention is provided for by special intervention plans (SIP) which envisage three levels of alert, the groups of people concerned, the distribution of stable iodine, the sheltering by confinement and evacuation

Civil and military resources which can be mobilised are organised at two levels, the first involving only civil resources, the second using military means.

The civil resources include firemen and mobile radiological intervention teams along with Civil Security, the Atomic Energy Commission and OPRI intervention units.

The military resources use the Radiological Protection department, the Research Centre of the Army Health Service and the Technical Armament Centre.

4.4.2 Medical field

Preparedness at the medical level takes account of protocols relating to the different radiopathological diseases and the number of patients admitted for treatment. Radiopathological diseases are usually classified in three broad categories, global irradiation syndromes, radiological burns and radioactive contamination.

Preparedness consists firstly in listing the laboratories and services in a position to treat radiation victims. It is then based on the prior establishment of protocols concerning the alert, admission for treatment and the tested methods of diagnosis and treatment of radiopathological diseases. It also takes account of emergencies for examinations to be performed and for urgent treatment (external and internal radioactive contamination, severe aplasia, extensive burns). Finally, it must consider the number of patients to be admitted either for examination or treatment. In general, two major situations can be identified:

- the most usual concerns a limited number of patients, no more than 10, for whom admission for treatment does not pose any major problem but who need to be properly orientated to the best laboratories and services.
- the most exceptional concerns accidents involving a large number of patients, over 100 and even up to 1000, in which case only a civil and military hospital network is capable of dealing with the demand following an extremely rigourous triage. The triage procedures must be specified in the preparatory phase, otherwise unnecessary hold-ups may occur and patients may be inappropriately treated.

4 5 Assistance is organised in the health and medical fields

4.5.1 At the health level, assistance is mainly provided through triage the procedures

of which have been planned in advance It is above all dosimetric and aims to provide a correct assessment of radiological exposures or radioactive contamination.

4.5.2 At the medical level, assistance relates to diagnosis, prognosis, treatment and the follow-up of victims.

This is provided by laboratories and services which have been previously selected within the Operational Intervention Network. The laboratories concern those capable of assessing the degree of radiological exposure or radioactive contamination (cytogenetic, HLA, multiparametric biological analyses, thermography and scintigraphy, nuclear magnetic resonance, radiotoxicological analyses). The services include haematological, medullary transplant, intensive care, remedial surgery, severe burns and nuclear medicine units.

The ICR Operational Network provides facilities for examinations and treatment which can fulfil reasonable requirements in the event of a major accident: over 100 patients suffering from medullary aplasia, radiological burns or radioactive contamination.

The assistance can be provided in the form of guidance, mobile teams or admission for treatment of victims.

Guidance concerns triage procedures, dosimetric and radiotoxicological assessment methods, examination procedures for diagnosis and treatment, treatment protocols for radiopathological diseases.

The mobile teams are made up of specialists who can be sent out to assist the laboratories or services who are treating victims of a radiological or nuclear accident. These teams are competent in reconstructing the accident, the dosimetry of external exposures, the radiotoxicological analyses, the diagnosis and treatment of patients suffering from radiopathological diseases.

The admission for treatment of radiation victims by the ICR Operational Network is considered, in France, preferable to sending out mobile teams. A grid system linking up all of the network's civil and military hospitals throughout the country ensures treatment for radiation victims in a given region if numbers are low, and on a nationwide basis if victims are numerous. The advantage offered by the treatment provided by the network's laboratories and services is that it is dispensed by highly qualified and specialised teams, properly equipped and trained in co-operation. In addition, the network organisation provides for situations involving a small or large number of patients, the management of emergency and non-emergency cases, and the admission for treatment of patients by the most competent laboratories and services.

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The national system which has just been presented in that which is applicable in France.

The ICR, as a WHO collaborating centre in radiopathology, can answer questions put forward by foreign authorities.

Assistance at the international level is provided by applying the conventions on notification and assistance in the event of a radiological or nuclear accident.

Requests must usually transit through the International Atomic Energy Agency and the World Health Organisation.

Should requests be sent directly to the International Centre of Radiopathology, it can accept them and undertakes to inform WHO and IAEA.