THE MACEDON DIGEST

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Produced by the Australian Natural Disasters Organisation

COMMONWEALTH POLICY ON TRAINING AND EDUCATION AT THE AUSTRALIAN COUNTER DISASTER COLLEGE

The lead article in the March 1987 issue of the Macedon Digest caused concerns about Commonwealth policies on disaster management training and education, and the role of ACDC. The statements contained in the March Digest, reflect the personal views of the Director and staff at the Counter Disaster College, and not all of them are consistent with those of the Natural Disasters Organisation, the Department of Defence, or the Commonwealth. The Counter Disaster College is not an autonomous institution, but is under the policy direction of the Director General Natural Disasters Organisation. The following statement by the Director General should clarify the situation.

The Australian Counter Disaster College is the training, education and research branch of the Natural Disasters Organisation. It was established under federal cabinet authority to contribute to the development of Australia's overall counter-disaster capability. It does this by conducting programs directed at either:

- developing particular competencies in individuals and groups involved in State and Territory counter-disaster arrangements, or
- improving a particular aspect of the national counter-disaster scene.

With regard to College Operations, it is DGNDO policy that:

- An integrated approach to training, education and awareness encompassing prevention, preparedness, response and recovery will be followed. Priority for attendance at courses will be accorded to the major preparedness and response agencies. However, other organisations which have the potential to contribute to the national capability will also have the opportunity to attend activities at the College.
- The curriculum development process at the Counter Disaster College will be refined and improved progressively. Although there is no intention to develop a post-secondary certificate course in the future, accreditation of selected aspects of the ACDC curriculum will remain under review.
- As its name implies, the Australian Counter Disaster College is a College, not an institute. It will continue to place its primary emphasis on training and education.
- The existing Training Policy Advisory Committee, established to advise the Director General Natural Disasters Organisation, will constitute the advisory body for the Counter Disaster College. There will be no independent academic advisory council.
- While the emphasis of the College will be on training and education, it is within its charter to conduct research.
- Nominations to attend courses for State counter-disaster agencies, will be in accordance with the agreed procedures which have been established between the Commonwealth and the States and Territories.

THE WAY-AHEAD FOR BUSHFIRE RESEARCH

Australian bush-fire researchers must adopt a national co-operative approach to bushfire research. This was one of the main messages to come out of a Bushfire Conference, recently held at the Australian Defence Force Academy (ADFA) in Canberra. The Conference, which was convened by Dr Neville de Mestre and his collegues to examine bushfires in heath lands, was attended by a wide cross-section of bushfire researchers and fire management personnel.

Organisations represented, in addition to the ADFA Mathematics Department, included various State Government public land management authorities. the Australian National University, the Commonwealth Scientific and Industrial Research Organisation, ACDC and firefighting services. The key-note speaker was Jim Brown of the U.S. Forest Service Fire Sciences Laboratory, who spoke about the U.S. experience with sampling fire in heath-type fuels. He advocated that fuel sampling techniques must be improved, with more research on live fuels and simpler methods to describe fuels. Other papers were presented on a range of topics including fuel modeling, live-fuel measurements, fuel sampling, forecasting of factors effecting fire behaviour, fire physics, fire temperature and the flammability of heaths.

The Conference recognised that in addition to the need for a national co-operative approach to bushfire research, other directions and priorities must also be pursued. The American Rothermel model for predicting fire spread and intensity, whilst in use in Australia, was seen as too complicated for widespread application by fire managers. The need for a simplified model for heath land fires specific to Australian conditions, was supported. Australian researchers were urged to adopt a national perspective to the need for an Australian model and to develop national objectives for bushfire research on heath management.

The Australian Defence Force Academy was seen as an important catalyst in the bushfire research field. But ADFA involvement could only be maintained if challenging topics were found to provide appropriate areas for doctorial and post-doctorial research. National support for ADFA's activities was also needed to ensure the continuance of this involvement.

In the short term, research priorities include the development of an appropriate fire model and simplified fuel sampling techniques, which will have wide-scale use and rapid application. In the longer term, it was considered necessary to achieve the integration of fire regimes to incorporate ecological considerations. In other words, the fire model must take account of all relevant community considerations. It was recognised that even for heath lands there may be a requirement for more than one fire model, as the needs of the fire control officer, disaster manager, fire ecologist and fire researcher are quite diverse.

A Report of Proceeding of the Conference is being prepared and information on the proceedings can be obtained by contacting Dr de Mestre, at the ADFA Mathematics Department.

THE GREENHOUSE EFFECT

The build-up of carbon dioxide and other gases in the atmosphere is leading to a warming of the Earth's surface, which is altering our climate. Dr Barrie Pittock, Senior Principal Research Scientist at the CSIRO Division of Atmospheric Research, has been examining this phenomenon. His research has come up with the following scenario for Australia in the year 2030 AD.

Physical Changes:

- Temperature up 2-3°c.
- Rainfall; summers about 50% wetter and winters about 20% drier, with a larger daily maximum rainfall.
- Large regional differences will occur in soil moisture, runoff and water supplies.
- Tropical cyclones will occur further south and perhaps be more frequent.
- More frequent extremes, such as floods and droughts.
- Salinity problems will spread inland.
- Snowlines will be higher.
- Sea levels will rise by 60-80 cm, leading to coastal flooding, salinity, erosion and storm damage.
- Ambient CO_2 concentrations will double.

Biological Effects:

- Plant species composition changes, due to large climatic changes and higher ambient CO_2.
- Plant disease distribution changes, eg. rust.
- Insect distribution changes, eg. locust, aphid.
- Watertable changes, leading to greater salinity problems.
- Coastal zone flooding and erosion, especially in mangroves and estuaries.
- Some species loss.

Source: Habitat, Vol. 15, No.1, February 1987.

PUBLICATIONS

Cyclone Winifred Impact Study Report

This is the first Research Report published by the Australian Counter Disaster College. The authors of the report are Professor John Oliver, Emeritus Professor and Consultant, and Mr Colin Wilson, Manager, Disaster Education Extension Program at ACDC. The authors visited the area impacted upon by Cyclone Winifred on 1 February 1986, a few days later. The objective of their visit was to record the factual details of the cyclone impact, and to present some thoughts on ways in which an even better response could be made to a possible future disaster in this area.

Copies of the report can be obtained by contacting the College.

Fire Models for Heathlands

Wendy Catchpole of the Australian Defence Force Academy's Mathematics Department, has produced two reports on Fire Models for Heathlands. The McArthur Meters and the Rothermel fire model have limits to their application in Australian fire conditions. For instance, the Rothermel fire model is only valid for fuels that are homogeneous, both horizontally and vertically. Because of these shortcomings, a program of heathland fuel sampling and experimental fires, was undertaken in two different heathland vegetation types. The first report examines fires in Casuarina nana heathland (Maths. Dept. Report No. 5/87). The second report (Maths. Dept. Report No. 6/87), examines fires in coastal heathland. Copies of the reports can be obtained by contacting Wendy at ADFA, Department of Mathematics, Campbell Park, ACT 2600, or ring (062) 663 454.

'Natural Hazards' - An International Journal of Hazard Research & Prevention

A new international journal titled 'Natural Hazards', has recently commenced publication. It is devoted to original research work on the physical aspects of natural hazards, the statistics of forecasting catastropic events, risk assessment, and the nature of precursors of natural and/or technological hazards.

Although hazards can originate from different sources and systems (atmospheric, hydrologic, oceanographic, volcanologic, seismic, neotectonic), the environmental impacts are equally catastrophic. This circumstance warrants a tight interaction between the different scientific and operational disciplines, which should enhance the mitigation of hazards.

Hazards of interest to the journal are included in the following sections:

G/General; A/Atmospheric, Climatological; O/Oceanographic, Storm Surges; T/Tsunamis; F/Floods; S/Snow, Avalanches; L/Landslides; ER/Erosion; E/Earthquakes; V/Volcanoes; M/Man-made, Technological; R/Risk Assessment.

Emphasis is on both analytical and statistical techniques, and case studies. Occasional state-of-the-art reviews will be welcomed. Additional features include: record of recent hazards, letters to the editor, calendar of events, and 'Hazards Forum', in which latter section policy makers are invited to contribute on social and political aspects of natural hazards.

Contributors are advised that the Australian contact for this journal is Dr Barrie Pittock, of the CSIRO Division of Atmospheric Research, Private Bag No. 1, Mordialloc, Victoria 3195.

VISIT

Reverend John Hill, Chairman, State Community Recovery Sub-committee, Victoria, along with two committee members, Ms Sue Gray and Ms Helen Hill, will be attending a workshop in Boulder, Colorado, U.S.A., from 19-22 July, on Hazards Research and Applications. The theme for 1987 is 'Creative Approaches to Hazard Mitigation and Disaster Recovery'.

Reverend Hill will be presenting a keynote paper entitled 'Community Recovery following Disaster', which will focus on the community recovery process, strategies to be implemented and issues to be considered.

It is anticipated that a report on workshop activities will be published in the next edition of TMD.

FEATURE

MEDIUM TERM RESPONSES TO DISASTER

This is the fifth article in a series on Human Responses to Natural Disasters, by Ruth Wraith and Rob Gordon from the Department of Child and Family Psychiatry, at the Melbourne Royal Children's Hospital. In this article, they look at medium term human responses to disaster.

Medium term responses are those reactions which occur in people affected by a disaster, from a period commencing some weeks after the event, through to twelve to eighteen months later. Although the post-disaster setting in a community is one of constant change, it is possible to identify a significant shift after the first few weeks. By this time the most pressing physical demands have been satisfied, affected people have found secure accommodation, immediate needs for continued life have been met, and routines for work, school and family life have been re-established. While the evidence of the disaster is still around, life can be described as 'returning to normal'. Combatant agencies are winding-up their services; relief agencies are scaling down their presence.

One of the first issues to arise in this medium term, is the disorientation resulting from the carrying on of normal patterns of life, in the midst of evidence of the disaster. This can sometimes lead to feelings of unreality, as people continue their lives. While the flurry of activity during the emergency is draining and confusing, it does allow people to come to grips with the fact that something extra-ordinary has happened.

When things settle down, however, it can be hard to know what to do with all the feelings generated by the disaster. While it is difficult enough to cope with them in the midst of the unusual events, at least they fit in with what is going on. But later, many people do not feel justified in continuing to have strong emotional reactions. This leads to a different type of confusion to that of the immediate aftermath, based as it is frequently on overload.

The Disaster Setting in the Medium Term

There are several key features of the disaster setting in the months after the event, which shape many of the reactions.

1. *The Administrative Setting:* Those who have suffered substantial loss, experience a seemingly interminable process of filling in forms, making claims, applications and chasing-up matters. Later, there are the problems associated with rebuilding and redevelopment. Although these are exhausting and taxing enough under normal circumstances, for these people, each one serves as a painful reminder of the loss and disruption they have suffered. Thus, there is an emotional dimension to these tasks, which greatly increases their stressfulness.

2 *The Social Setting:* As time passes after the disaster, people begin to differ widely in regard to the continuing significance and impact of the disaster. Some are affected more than others, some prefer to try and forget, while others need to talk about it. Those who have suffered loss, continue to require support of many types, while others wish things to return to normal as soon as possible. Because of the high continuing stress levels, these differences become tensions and serve to undermine the network of support that operated before the disaster.

In addition, the wider population resumes its life and the affected community may feel forgotten, as the media return to more newsworthy matters and new political issues surface. This adds a sense of isolation and disappointment to the other existing feelings. On a more personal level, people begin to find that their friends and relatives outside the disaster area, are tiring of hearing about it, or may even be saying such tactless things as 'When are you going to put it behind you and get on with life?' or 'Can't you stop talking about it, we are sick of hearing about it.' This means they have to turn back to the already beleagered community, for help and support.

3. *The Physical Setting:* In the early post-disaster period, the effects of the damage and disruption are assayed, in relation to the current situation; planning proceeds on this basis. But as the seasons change and time passes, successive new consequences are revealed and seem to pile on top of each other. For example, the first rains after a bushfire bring a black quagmire that makes life impossible for people in temporary accommodation.

Also, burnt soil erodes readily. As the season progresses, the failure of new pasture to grow becomes evident.

Many results of the disaster take several months to appear, and although they are obvious to planners and community leaders, they may not have been anticipated by residents busy coping with their own affairs. Thus, each new stage becomes a painful new realisation.

4. *The Time Setting:* As time passes, it eases some pains, enables people to adjust to new situations and to become adjusted to changes. But time also brings to the fore, successive painful reminders of life before the disaster. Most obvious is the anniversary of the disaster itself, which rekindles many of the feelings. The first heavy rain after a flood, or the first strong wind or hot day after a fire, all bring back the fears and memories, regardless of the other circumstances. If the summer after a bushfire is dry, it promotes anxiety. If the winter is wet, people think of the growth and when the grass dries, they fear fire. If there is little rain, they fear drought and heightened fire conditions.

Time also brings the birthdays and other regular events of the year; people naturally think back to the same events in the previous years and again they serve as painful indicators of the disruption and loss of their lives.

5. *The Personal Setting:* Life for most people in a disaster affected community, is greatly changed. For those who have suffered loss there are all the tasks involved in re-building and re-organising their lives. But many other sections of the community experience disruption. Local government and service providers, tradesmen and other workers, are put under constant pressure to meet the continuing needs. Children and adults are all preoccupied with monitoring what is happening in their community, and accepting the past. There are apprehensions about the future, disappointments and disillusionment, stresses and strains, and close relationships are overloaded, leading to feelings of isolation and conflict.

This is the time when relationship problems which have been successfully accommodated under normal circumstances, emerge in the stress of the medium term, and lead to serious difficulties, arguments, separations or conflicts.

This may happen in marriages, between parents and children, brothers and sisters, members of the extended families, friends and work-mates. The very personal networks which should provide the support and assistance to get through this difficult time, often become the source of even further problems.

6. *The Wider Setting:* Life also goes on in the rest of the environment. Impending changes take place, new problems emerge, political decisions are made, other tragedies occur. Economic circumstances may change, regardless of the disaster, patterns of employment may change, as a direct result of it. Accidental deaths, terminal illness, suicides or other dramatic events, all impinge upon a community already stressed and overloaded. The effect of these continuing events, is exaggerated and tends to become confused with the disaster itself. Recovery problems are complicated, and time and energy are dissipated in an increasingly complex situation.

These are some of the aspects of the total post-disaster setting, which continue to evolve and impose constraints on the process, of coming to terms with the disruption it has caused. They interfere with, and shape people's responses, but they also throw-up changing challenges, all of which require ingenuity and emotional energy to meet.

On-going community, family and personal processes provide the essential framework in which to understand medium term responses; since they are no longer only responses to the disaster, as is the case in the short-term. They are responses to the *accumulating repercussions and consequences* of the disaster and to a *changed ability to meet the ongoing requirements of ordinary life.*

However, it is the disaster that provides the focus for the responses; it can also provide the framework through the recovery system, to supplement the services available, to assist people through these difficult months.

Medium Term Personal Responses

The responses which occur in people in this period, can be divided into a number of headings, indicative of the different areas of life affected, and the various demands occuring.

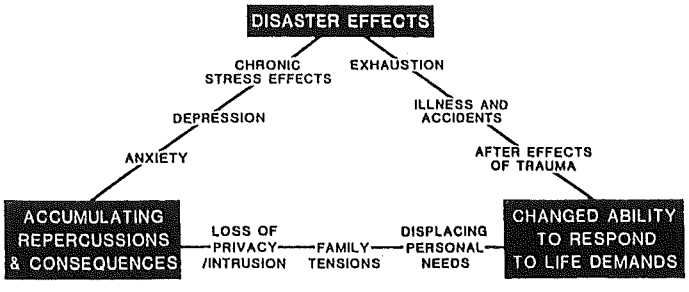
1. *Overwork, exhaustion, burn-out:* The excitement of the early weeks, often establishes work patterns with insufficient recreation and rest. Because of the overwhelming task of reconstruction and reduced resources, there is a tendency for these patterns to persist through the medium term. Work becomes a refuge from other more difficult emotional, or relationship problems. People get into a vicious circle of reduced efficiency, increased effort and reduced quality of work.

2. *Chronic Stress Effects:* The acute stress problems of the short-term change in character as months go by, with high continuity stress levels. Tension, irritability, sleeplessness, increased use of alcohol, cigarettes, medications continue. Inability to relax, withdrawal from interpersonal contact or avoidance of being alone, also occur. Emotional relationships are put on hold, until other pressing needs are met. A variety of psychosomatic problems begin to occur, as stress continues. They include digestive disorders, headaches, back aches, menstrual disorders, excessive tiredness, skin conditions, and sexual difficulties.

These problems indicate that with time, stress becomes distress and without help can lead to significant deterioration in health.

3. *Illness and Accidents:* Both increased susceptibility to infections, as well as the appearance of more serious illnesses, are associated with severe stress and are seen following disasters. Accidents also tend to occur during periods of communal stress, such as changes in weather, anniversary periods, or other times of difficulty.

4. *Depression:* This is a major problem as months go by. Not only is it an indication of the magnitude of the task, but it's also a result of the disappointments and sense of despair, that occurs when there are inadequate social supports available. Many people become more private in their depression, and even hide their feelings from immediate family members. The isolation is increased by the feeling that people should not let their unhappiness show, because after all, everyone is in the same boat and it would be 'letting the side down.'



Medium Term Responses to Disaster

5. *After-effects of Trauma:* Where people have suffered threat to life, personal injury or other traumatic experiences, they are liable to emerge in the medium term in the form of nightmares, fears, flashbacks and preoccupations with the past. This causes confusion and fear, as people tend to imagine that such things should fade quite quickly. Often there is a tendency to try to control such reactions by shutting them off. This tends to make people withdrawn, emotional or irritable and liable to outbursts of temper.

6. *Anxiety:* This is a common reaction. The actual fears of the disaster, are often pushed aside by the immediate demands of safety at the time, and by the high activity levels of the aftermath. But with time, as there is some relaxation, the fears return, but often not in direct association with the actual memories of danger. Or they may mean for some people, that the disaster has undermined their sense of security and safety. A common expression is fear or reluctance to go far from home, meet new people, or try new things.

7. *Displacing Personal Needs:* Both physical demands and emotional stresses, encourage people to put aside a variety of personal needs, such as recreation, relaxation, time for hobbies and interests. People get out of the habit of doing many of the things that are rewarding and satisfying to them. They also ignore difficulties that they would have remedied quickly, and as a consequence, small problems turn into big ones and become difficult to solve.

8. *Intrusion, Privacy and Isolation:* The comradeship and closeness of the immediate aftermath together with the influx of disaster related agencies, such as outreach, insurance, social service, and many other groups, create a new lifestyle of involvement with each other. In the medium term, there are continuing requirements to deal with others, but new relationship networks build-up, that often leave people feeling they have lost their privacy, and their personal lives are subject to constant intrusion. Some people have been known to shut themselves in their homes to avoid a well-meaning friend knocking at the door. Lack of privacy takes away the essential space, in which to work through losses, come to terms with fears, or accept change.

At the same time, the contact that does occur is often around practical issues, gossip or criticism and complaint. People then feel they lack opportunities to share their more intimate experiences; this can leave them with a sense of isolation, in the midst of all the interaction.

9. *Family Tensions:* The multiple stresses and strains are inevitably exposed in families. Unless there are opportunities to communicate, understand each other and solve problems, difficulties begin to build up after the disaster. Following the immediate aftermath, family members often settle down to adjusting to a new environment. Parents are busy and preoccupied, children recognise this and make fewer demands. Husbands and wives endeavour to support each other. However as the months pass, the children begin to make demands, or in the case of adolescents, may turn outside the family for support. The parents find themselves preoccupied and isolated and then misunderstandings and disappointments develop.

To begin with, these problems are within the normal range, but often the post-disaster situation tends to undermine problem-solving capacities, and some families find themselves in serious trouble, after a year or so. Marital breakdown, parent/child relationship problems, behaviour and learning problems and deliquency can all occur. Sometimes the processes set in train, do not culminate in clearly identifiable problems, until well over a year, because of the strenuous, though often uncoordianted efforts of family members, to stick by each other.

Helping Medium Term Responses

The problems outlined above, are only some of those encountered in the first year or two, after a disaster. But they illustrate the interactional character of the stresses, and the developments of difficulties over time. It should not be imagined, that everyone develops disorders, or all families become dysfunctional. Most people do cope. But everyone is subjected to some of the sorts of pressures illustrated, and even if formal assistance is not sought, there is still much that can be done to assist people. The strong tendencies to deny the extent of disruption, to conceal one's own difficulties and to keep up a front before others, create an inaccurate impression of the state of affairs.

However, talking in depth with people, they can describe not

only their own, but also the problems being experienced by their friends and neighbours. It is hurtful and aggravating for people to have the difficulties either overstated, or minimised. Yet there are a number of simple measures which can help to create a community atmosphere of concern and care, and in which problems can be tackled.

1. *Practical support:* This can take the form of assistance with many small jobs, which seriously interfere with life. This not only includes older people, but all age-groups. Service Club working bees, drop-in centres, child-care facilities, shower and laundry facilities, district public transport are some examples. The effects of such help goes far beyond the practical results, in reducing stress and creating a supportive atmosphere.

2. *Outreach follow-up:* Sensitive and selective outreach and follow-up, may identify people who are too apprehensive of officialdom, to claim the assistance they are entitled to, or who have developed a variety of new needs. Sometimes people also require a sympathetic listener, to give them the opportunity to clarify their needs, and often, may need someone else to suggest the kind of help which might be of assistance.

3. *Integrated network of services:* High stress levels make it difficult to set priorities. The need for personal counselling may become apparent through an unrelated issue, such as a broken sewer. Or it may be that a welfare worker hears of a bureaucratic mistake. Such a failure to seek help from the right quarters is common. An integrated network, in which workers as diverse as local government, the Department of Agriculture, utilities, government and voluntary welfare agencies, can be of great assistance, if they know what is available, the type of needs people are likely to present and can direct them to appropriate staff.

Helping Medium Term Responses to Disaster

4. *Group Work:* The establishment of groups for a variety of purposes, helps provide opportunities for people to share experiences, give and receive support, and participate in the rebuilding of their community. Groups can be formed for emotional support, practical assistance, planning, coordinating services, gaining or dispersing information, education, psychological debriefing and recreation or social activities. The value of the feeling of belonging and acceptance and of recognising shared problems and experiences, is as important as the actual activities undertaken. Often people need someone to take the initiative and provide the co-ordination, to bring them together. Local government, health, welfare and other workers, are likely to become aware of people with common needs and interests, who may be unaware of each other. Or they may be able to facilitate an initial opportunity to meet, after which, the group can carry on itself.

5. *Information and Education:* People have a continuing need for information about their entitlements, services offered, resources available, community and government programs, local developments and future plans. Basic information needs to be constantly repeated as peoples' receptivity changes with their circumstances; what is not needed at one stage, is required at another, and often people need time to come to terms with needs, before seeking the appropriate assistance. In a disaster aftermath, everything is accompanied by an emotional working-through process, which takes varying lengths of time.

Education can provide information about normal reactions and expectations, especially of chidren and families, when and where to seek help, self help, and preventative health measures. Such knowledgement relieves anxieties and doubt about one's own state, and enables people to take increasing control of their own recovery.

6. *Recreation:* There is a great danger that recreation and leisure will be lost sight of, even some time after the disaster. People get out of the habit of their previous lifestyle, hobbies and interests. This is partly through lack of time, energy or opportunity, but it is also a reflection of emotional pre-occupations. These activities also often symbolise pre-disaster life, which people feel cut-off from. Often they can only reconnect with these aspects of their life, towards the end of the medium term (i.e. towards the end of the second year).

It is important for community and recovery workers to be aware of the need to foster family activities, leisure and recreation activities, clubs, and facilities, children's programs and to encourage individuals to explore new interests. Successful initiatives have included a voucher system for people to dine out, community street drama, anniversary festivals, hobby clubs and social groups.

7. *Worker support and debriefing:* Workers in all areas of the recovery have a continuing need for support and debriefing. Often it is only towards the end of the medium term phase, when things are beginning to return to normal, that some of those most deeply involved, start to feel exhausted and burnt-out. If these people are not to be lost to their future work and suffer serious personal disruption, they need opportunities to evaluate and work through their work and its impact on their personal and family lives. People who have worked in a voluntary capacity, are a particularly important group in this respect. Sensitive invidual contact with workers trained in psychological debriefing, may be the most appropriate form, especially where the latter have been accepted as part of the recovery system. Another valuable forum is meetings of local workers, with counterparts from other areas who have experienced disaster, or with more centralised disaster managers.

Continued in September TMD—'Long term responses to disaster'.

EDUCATION

ACDC Program - 12 July to 18 September 1987

Introduction to Hazard Analysis (1072)	12-17 July
Counter Disaster Planning (1074)	16-21 Aug
Introduction to Disaster Management (1075)	23-28 Aug
Management of Disaster Response (1076)	30 Aug-4 Sept
Hazard Analysis Techniques (1077)	6-11 Sept
Workshop on Hazard Management and the Environment (1078)	14-18 Sept
Reserved (1079)	28 Sept-2 Oct

Enrolment procedures vary according to the type of activity. Details are outlined in the Program of Residential Activities, or can be obtained by contacting the College direct on (054) 26 1205.

88/89 Curriculum

User suggestions for activities to be included in the 1988/89 curriculum, will be sought shortly for:

- those activities aimed at developing State/Territory counter-disaster capabilities; and
- those activities aimed at improving a particular aspect of the national counter disaster scene.

Copies of the appropriate pro-forma may be obtained from the Head Office of the relevant State or Territory Emergency Service, or by phoning the College Planning Officer on (054) 26 1205.

CSIRO Seminars on the prediction of Nuclear Winter

During March, the CSIRO Division of Atmospheric Research at Aspendale, Victoria, conducted a series of three seminars on the prediction of a nuclear winter as an outcome of a nuclear war.

One of these was given by Dr Ian Galbally of the Division; the others by Dr Bob Malone of the Los Alamos Laboratory, USA.

Dr Galbally presented a paper titled 'Ascending Stage of a Nuclear Fireball'. Dr Galbally was attempting to determine the amount of carbon that would be released into the atmosphere as a result of the inclusion of carbon rich material in the nuclear fireball from the explosion of a nuclear bomb. He proposed that if this is found to be a significant amount, then this process could contribute significantly to the onset of a nuclear winter.

Dr Galbally outlined the model he had used and explained how all the elements of the model had been calculated. The basis was that the explosion occurred above ground and a large amount of debris was thrown up into the atmosphere. A lot of debris fell to earth immediately, however the model consistently demonstrated that all carbon within the mushroom cloud would be burnt by the oxygen contained in the fireball and not deposited in the atmosphere.

Dr Bob Malone is in a theoretical modelling group at Los Alamos, which is a major nuclear weapons research laboratory in the USA. He presented one paper on atmospheric transfer processes, which is relevant to the likelihood of nuclear winter smoke spreading to the southern hemisphere.

The second Malone paper presented the latest Los Alamos results on modelling the nuclear winter scenerio. The major difficulties in obtaining an accurate prediction of the likelihood of a nuclear winter are, an uncertainty as to the size of any nuclear exchange, and the effect of the time of the year on the amount of smoke which would remain in the atmosphere. It seems that the uncertainties in the modelling are less than the scenario problems.

A nuclear winter would be created by the differential passage of visible and infra-red radiation. In the modelling process, the time scales are important in the smoke removal processes, as are the changes that may take place in the atmospheric structure, especially thermal turbulence.

The model used at Los Alamos is a three-dimensional time dependent model, developed originally by Bourke and others for the Australian Bureau of Meteorology. It considers the atmosphere from the surface to 30Km high. There is a realistic distribution of cloud, ice, ocean and topographic features. It allows for evaporation, transport and precipitation of water, as well as cloud formation.

The basic input to the model was 170 Tg (170×10^{12} g) of smoke, which is midway in the range suggested by various large-scale nuclear war scenarios. The injection level of the smoke has not yet been resolved, with the two possibilities being low level (2-5Km altitude) and the National Academy of Sciences suggestion of 0-9Km.

The model suggested that the nuclear winter would be more severe in summer (July), than Winter (January). The removal in the first five days would be by rain and in July that removal rate is low. By 40 days after war, one third of the mass of smoke would still be in the atmosphere, whereas there would only be 7% in winter. For a July war, there would be 90% solar absorption after 21 days, but only 10-18% attenuation at 40 days, averaged over the Northern Hemisphere.

After 5 to 10 days in July (summer), the temperature would decrease in the northern hemisphere, with very little effect in Australia. At 20-25 days, increased cooling in the northern hemisphere would occur but still no significant effect would occur in Australia. At 35-40 days, the cooling in the Northern Hemisphere would be a little less, but enough smoke would have moved at high altitude into the Southern Hemisphere, to cause solar absorption of some 10-20% with cooling of 5-10 degrees over continental areas.

In the case of January war (winter), no smoke moves into the Southern Hemisphere for up to 40 days. The effects are mainly in the south of the Northern Hemisphere.

Some modifications have been made to the model; in particular incorporation of absorption of infra-red radiation by smoke; stability - dependent vertical mixing; surface storage of heat; annual cycle of solar declination; diurnal solar zenith angle, and high resolution, non-diffusive Lagrangian tracer transport.

This model shows that for a July war, the average temperature drop at 30-50°N would be -11°c compared to -18° with the older model. Local maximum coolings due to variability in smoke cover and weather, could be quite a bit larger.

The impact on the Southern Hemisphere for July for both models is similar, with a temperature drop in the first 2-3 weeks of 5-10 c; after 4-6 weeks the temperature would have recovered to near normal (perhaps 2-4°c) for Australia.

Further information on these subjects can be obtained from either Dr Barrie Pittock or Dr Ian Galbally at CSIRO Division of Atmospheric Research, Aspendale, Melbourne (Telephone 586 7666)

RESEARCH

Effects on the Victorian Workers involved in the Ash Wednesday Bushfires

Forty-four people who were both helpers in, and residents of communities involved in the 1983 Ash Wednesday bushfires participated in the study. They were interviewed by Dr Julie Jones, Consultant Psychiatrist, Royal Children's Hospital, 12-14 months after the fires, and all completed a questionnaire about two years after these interviews.

The following is a summary of the main results of the interviews.

Interviews One Year after the Fires:

Forty of the forty-four participants described the fire experience as being at least, moderately stressful. Twenty-one felt their physical and twenty-seven felt their emotional health was at least moderately affected. Those who were stressed experienced most effects on their psychological and physical health. Sex, age and years of professional experience were not related to these variables but there was a tendency for doctors to report less effects on both their emotional and physical health.

Most participants reported that in the month immediately after the fires, they felt increased excitement/energy (91%), shock/bewilderment (82%), anxiety/distress (64%), depression/sadness (59%), euphoria (on a 'high') (55%), confusion/uncertainty (50%) and disturbed sleep (50%). In the 2-9 months after the fires, most reported depression/sadness (68%), dependency/need for support (68%), fatigue (66%), anger/rage (61%) and anxiety/distress (50%). By the end of that first year, most of these strong feelings had abated, though about 1 in 5 still reported fatigue, depression/sadness, dependency/need for support, anger/rage and/or disturbed sleep.

Fifty-nine percent of participants reported that their relationships with partners had suffered; of those with children, 36% reported impaired relationships. On the other hand, a third noted improved relationships with children, and about half felt that their relationships with both colleagues and friends had improved.

In the initial period after the fires, about half felt that their work effectiveness had improved while a third reported impairment. By the one year mark, half felt their work effectiveness was back to normal while a third felt it was improved as a result of skills acquired since the fires.

Although many of the participants reported horrific experiences during the fires, nearly half, at one year, seemed to feel that they had gained considerably from the experience. In particular, there were comments about increases in self-awareness, confidence, skills and better understanding of other people.

Questionnaires three years after the Fires: Most (75%) felt their physical health was back to normal and about half felt this about their psychological health. However, 23% noted that their physical health was worse. This contrasted with the 36% who reported better psychological health than pre-fires. These

changes were considered to be at least partly attributable to the fire experience. Between 40-60% felt that their relationships with partners, chidren, colleagues and friends were back to normal. A positive finding was that at least a third felt that as a result of the fires, their relationships with their partners, children, colleagues and friends were in fact improved at three years. Very few reported impaired relationships with these people as a result of the fires. Similarly, while 43% felt their effectiveness was back to normal, 46% felt that a better work effectiveness had resulted from the bushfire experience. Twenty-five people thought their career goals had altered and 17 attributed this at least, in part, to the fires.

In commenting on the effects of the fires on the communities, a mixture of positive and negative responses were recorded. For example, some commented on a common bond between people who were involved, while others noted continued greed and lack of motivation. Most seemed to feel that the communities were not back to normal and a fear that the long term impact was yet to come was expressed by some.

INTERNATIONAL

Association of International Disaster Experts (AIDEX)

A new professional network has been established for persons who are specialists or consultants in one or more aspects of hazards, disasters and emergency management. Membership is open to professionals working in the areas of natural, man-made, and technological disasters as well as fire, hostage taking, and terrorism.

To qualify for membership an individual must be engaged in professional assignments or contracts relevant to emergency management, whether teaching, research, administrative or managerial, or consulting. In addition, a member must have completed projects of high quality and enjoy the respect of his/her peers. For these reasons, AIDEX is expected to remain a relatively small but high quality association. The cost is US$25 per year.

The near-term objectives of the organization are:

★ to form a loose association of persons throughout the world who are engaged in projects in the fields of emergency management and disasters;

★ to enable members to meet other persons engaged in related work in order to share experiences and also to consider fellow AIDEX members for potential collaborations;

★ to provide a Directory of Members, which includes details about their expertise and experience; and

★ to meet annually to discuss topics and concerns that are of general interest.

For further information and a membership application, contact Ms Claire B. Rubin, Executive Secretary of AIDEX, at P.O. Box 2208, Arlington, Virginia 22202, USA.

Second International Symposium on Fire Safety Science, 13 - 17 June, 1988

Hosted by the Japan Association for Fire Science Engineering, Tokyo.

The first Symposium was held in 1985 (hosted by the U.S. Bureau of Standards). Over 100 papers were presented. During the Symposium the International Association of Fire Safety Science (IAFSS) was formed, with the primary object, to encourage research into the science of preventing and mitigating the adverse effects of fires, and to provide a forum for presenting the results of such research.

Papers for the second Symposium are now being requested, in areas like fire physics, fire chemistry, smoke toxicity & toxic hazard, detection, suppression and structural behaviour.

Papers should be submitted by 13/8/87 to:

Mr G. Cox,
Building Research Estab. Fire Research Station,
Borehamwood, Hertfordshire,
WD6 2BL, ENGLAND.

Symposium and Workshop on Protecting homes from Wildfire in the Interior West of USA

October 6-8, 1987 at the University of Montana, Missoula, Montana.

Sponsored by the US Forest Service, the Society of American Foresters, the National Fire Protection Association, and the University of Montana.

The aim of the Symposium is to examine the problems of protecting forest and rangeland homes from wildfire, to reveal threats of wildfire damage to life and property and the associated costs, and to present the state-of-the-art approach to the wildfire problem. Participants will formulate recommendations for homeowners, government agencies, fire fighters and the business community.

Proceedings will be published by USDA Forest Service.

For further information contact:

Centre for Continuing Education,
125 Main Hall,
University of Montana,
Missoula, MT 59812,
USA. Telephone (406) 243 4623 or 243 2900

REFLECTIONS

The following report appeared in the Melbourne 'Age' on 25 June 1959:

> 'Australia's civil defence picture today is even on the most charitable reckoning, uninspiring. It can only be hoped the report which the Commonwealth inter-department committee on civil defence is expected to deliver soon will change that picture for the better. The shortcomings are certainly no fault of the few devoted men who have battled along for years now to get a sound civil defence system established here.'

BOOK REVIEW

Guide to Emergency Planning

The Society of Industrial Emergency Sevices Officers (1987), Paramount Publishing Ltd., UK.

ISBN 0-947665-03-X.

This book describes basic principles of emergency planning and contains a step by step outline on the development of an effective emergency response. Any safety officer or state emergency service worker would find this small book an ideal text for their work. The principles explained in the eight sections apply to any institution or industry which has a need for safety planning.

The sections in the book explain:

Why an emergency plan is necessary.
How to plan for on-site and off-site emergencies.
The necessary steps for control of any emergency.
The organisation of check lists.
Protection of personnel.
Communications.
Reconstruction after the incident.
Training.

An appendix on major disasters is of general interest to workers in the field, as it describes some of the major disasters in the world, including Cyclone Tracey.

The book is concerned about all types of hazard and practical procedures for everyone, from top management to the worker on the floor. It does not offer a specific emergency plan, because it is recognised that every organisation has its own risks and problems in finding the resources for safety planning. Therefore the guide is broad enough for anyone to read and use in their own organisational context, without worrying about its applicability to their situation.

The Society of Industrial Emergency Services Officers which published the book, was established in Britian in 1953 to give support to officers in industry (including petrochemicals, water, gas and electricity) and local government and vocational groups including fire, rescue, policing, medical services and the voluntary agencies.

Sally Leivesley.

EXERCISE

Emergency Exercise 'Echo 2', Melbourne Airport, 30 April, 1987

All Australian airports are required by the International Civil Aviation Organisation (ICAO) to conduct an annual emergency exercise. At Melbourne Airport an exercise, code named 'Echo 2', was held on April 30 this year.

The scenario for the exercise was briefly:

> A Melbourne Airlines Boeing 767 with approximately 200 persons on board, and a consignment of dangerous cargo, takes off from Melbourne Airport bound for Auckland, New Zealand at approximately 6.30 pm (local time). Just after take off, the aircraft sustains a multiple bird strike, with immediate loss of power in one engine. The pilot reports to the control tower of his problem and of his intention to return to the airport. Further complications set in and the aircraft crashes off the airport.

The aims of this exercise were:

(i) to evaluate the effectiveness of the airport's emergency plan and organisation;

(ii) to provide all emergency services with the opportunity of participating in an airport emergency exercise; and

(iii) to enable all emergency services to assess their effectiveness.

Planning for 'Echo 2' commenced well before the exercise, with the main organisation swinging into action during the last weeks before the exercise. Many things had to be organised including:

—volunteers for passengers and crew;
—observers from emergency organisations; and
—umpires from selected emergency organisations.

The exercise officially commenced at 7.32 pm, with a message to the tower that the aircraft had crashed.

Initial response to the site was by the airport Rescue Fire Fighting Service (RFFS), and the Airport Safety Officer (ASO). The RFFS extinguished the fire shortly after arriving, then assisted in the evacuation of the aircraft. The ASO set up a command post on arrival.

As 'off' airport emergency services arrived, they made contact with the ASO in the command post. Emergency services that responded included the Victoria Police, Metropolitan Fire Brigade, Federal Police, State Emergency Service, Ambulance Service, Red Cross, Salvation Army and others.

The major part of the exercise commenced, on arrival of the off airport emergency services, with seriously injured and walking wounded being evacuated away from the crash site.

The co-ordination and control aspect were most important, as 200 passengers suffering from severe or minor injuries, or just shock, were dealt with on a priority basis. Badly injured were evacuated to hospitals and others were ferried to a registration point, where they received first aid and welfare.

The exercise concluded at approximately 11.00 pm, when all passengers had been evacuated from the site.

The general feeling of organisations participating in the exercise, was that the exercise was a success, even though there are still some problems to iron out. The debriefing session held the day after the exercise, highlighted some specific problems which participating organisations will have to resolve.

One of the major problems identified by this and previous exercises, is that of the command and control function. It is proposed that the three major services (Fire, Ambulance and Police), together with the Airport Authority, conduct a workshop, under the guidance of the ACDC, to resolve this problem.

Source: Tony Rohead, Department of Aviation.

LIBRARY

The following publications have recently been added to the ACDC library collection. Items may be requested through the inter-library loan system.

AFTER THE EARTHQUAKE TOWARDS RECONSTRUCTION. Press and Public Relations Office of the Minister for the Co-ordination of Divil Defence for Campania and Basilicata.
363.3495094577 DOP

AGRICULTURAL CHEMICALS HAZARD RESPONSE HANDBOOK. Agro-Research Enterprises Ltd., New Zealand.
F363.179 AGR

ANDERSON, RALPHE, E. Human Behaviour in the Social Environment.
306 AND

AUSTRALIAN ATOMIC ENERGY COMMISSION. The Chernobyl Nuclear Accident and its consequences.
DUCOR 00237 U

BENNETT, G.F. et. al. Hazardous Materials Spills Handbook.
363.179 BEN

BUSHFIRES AND THE AUSTRALIAN ENVIRONMENT. Report by the House of Representatives Standing Committee on Environment and Conservation.
P632.180994

BIOLOGICAL ASPECTS OF FALLOUT IN AUSTRALIA FROM FRENCH NUCLEAR WEAPON EXPLOSIONS IN THE PACIFIC.
P363.73920994

CARTER, W.N. Report on Cyclone Namu, Solomon Islands.
P363.3492509935

CHARTRAND, R.L. & PUNARO, T.A. Information Technology Utilization in Emergency Management.
DUCOR.00236 U

CLARK, A. The Wrath of the Waters: the Takaka Valley Flood.
F363.349093153 CLA

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Contributions are welcomed and should be addressed to:
The Editor, "The Macedon Digest", Australian Counter Disaster College, Mt. Macedon 3441, Victoria, Australia. They should reach the College at least 1 month prior to the date of publication which is the first day of each quarter.

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