SUPPORTIVE ENVIRONMENTS FOR HEALTH

WORLD HEALTH ORGANIZATION
Regional Office for Europe
Copenhagen

Supportive environments for health

Major policy and research issues involved in creating health promoting environments

by

Kathryn Dean, WHO Collaborating Centre for Health Promotion Research, Copenhagen

and

Trevor Hancock, Public Health Consultant, Ontario, Canada

1992

HPR-1

Keywords

– HEALTH PROMOTION
– HEALTH POLICY
– SOCIOECONOMIC FACTORS
– ENVIRONMENTAL HEALTH
– LIFE STYLE
– EUR

CONTENTS

Introduction

Creating supportive environments is one of the cornerstones of health promotion. This booklet is about environments: the contexts in which human health is improved, maintained or harmed. Its three parts are intended to stimulate discussion and action on subjects that are important not only for human health but also for human survival on a deteriorating planet.

Daily concerns with making ends meet make it difficult to maintain an awareness that the environments in which we live and work shape our health and wellbeing. Faced with the threats of no or slow economic growth, unemployment and poverty, we can easily overlook the fact that human survival is not only unimportant but also threatening to the stability of the biosphere. It is also easy to be deluded by blind demands for growth, demands that fail to recognize the interconnectedness of not only the elements of the biosphere but also the economic circumstances of nations and localities.

The interaction of environment and economy can no longer be ignored. It is the focus of sustainable development. People are only beginning to face the consequences of overdevelopment and underdevelopment in the world; these two extremes must be reconciled in sustainable development that will allow health promoting societies.

In health promotion, the fundamental concept of the notion of environment is context, and the focus is on the contexts in which people live their daily lives. Such a context includes the social as well as the physical environment. The social environment is the

web of personal relationships and resources that underpin human nurture and development. It is equally as important for life and health as the physical environment. People seldom think of the social environment in relation to sustainable development. This oversight needs to be redressed. Excessive demands on social environments lead as surely to their deterioration and breakdown as do the overdevelopment and abuse of physical environments.

This booklet highlights major policy and research issues involved in creating health promoting environments. The first paper focuses on general subjects in environmental policy and research, concentrating on the physical environment and particularly the major environments of everyday life. The second paper discusses issues in research on human health. It focuses on research on social support and health, but the basic issues and arguments are equally relevant to research on the physical environment.

Kathryn Dean
Trevor Hancock

Promoting health environmentally

Trevor Hancock[a]

Introduction

One of the key issues in the new public health is the creation of healthy and supportive physical and social environments. This need was recognized in the Ottawa Charter for Health Promotion and by the choice of the theme of supportive environments for the 3rd International Conference on Health Promotion, held in Sundsvall, Sweden in June 1991. Towards the end of the 1980s, the global agenda increasingly shifted towards the need to address the quality and sustainability of the physical environment and ultimately the global ecosystem. This is evidenced in the World Commission on Environment and Development report, *Our common future (1)*, and the earlier report of the International Union for the Conservation of Nature, which proposed a world conservation strategy *(2)*. The links between health and the environment have become ever more obvious. The environmental movement has recognized that the health effects of environmental problems carry great social and political punch, while the health sector has increasingly recognized the health consequences of local and global environmental problems. A recent Canadian workshop on the health dimensions of environmental issues *(3)* noted that "the

[a] Public health consultant, Kleinburg, Ontario, Canada.

primary reason for being concerned about the environment is human health".

Environmental health thus seems likely to be a vital area of concern in the 1990s. There is a unique opportunity to apply the lessons learned from health promotion to the business of protecting the health of the environment and that of the people living in it. Two of the pillars of public health – health promotion and health protection – need to be fused to form a new public health, which should then be linked to the issue of sustainable development. Health must be an issue in sustainable development and sustainability in health.

This paper summarizes the links between health and sustainable development, using the model that has evolved from the York conference on health, the environment and the economy *(4)*. It addresses some of the fundamental differences between health promotion and health protection and some of the issues that they raise, and reviews the themes and strategies that might be used in promoting environmental health. The paper ends with specific proposals for projects to promote environmental health.

Health – environment – economy

The interaction of the environment and the economy is the subject matter of sustainable development. How can an economy be fashioned that is indefinitely sustainable in environmental terms? An economy that is not indefinitely sustainable dooms future generations to ecological decline or collapse, with accompanying economic and social decline or collapse.

The term sustainable development has been criticized for its apparent focus on economic development, although it really refers to economic development that is environmentally sustainable. Osberg *(5)*, among others, has suggested that economic development needs also to be socially sustainable. Perhaps it would be even better, in fact, to focus on human development, and to say that what is needed is a form of environmentally and socially sustainable economic activity that enhances human development.

Fig. 1 shows the relationship between health, the environment and the economy. From the point of view of the planetary biosphere of which we humans are a part, our continued wellbeing and even our continued survival are unimportant. Indeed, from such a perspective, our continued existence threatens the stability of the planetary biosphere that is Gaia *(6)*, because of the current unsustainable nature of our economy. What human health requires, however, is an environment that is viable, that sustains human life. To the extent that the unsustainable nature of economic activity reduces the viability of the environment, humankind threatens its own wellbeing and survival, as well as those of thousands, even millions of other species in the web of life.

Fig. 1. The relationship between health, the environment and the economy

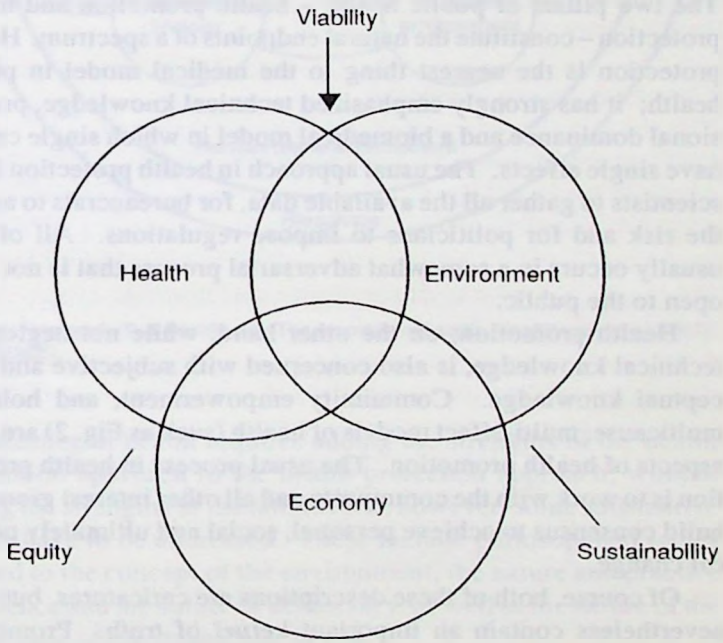
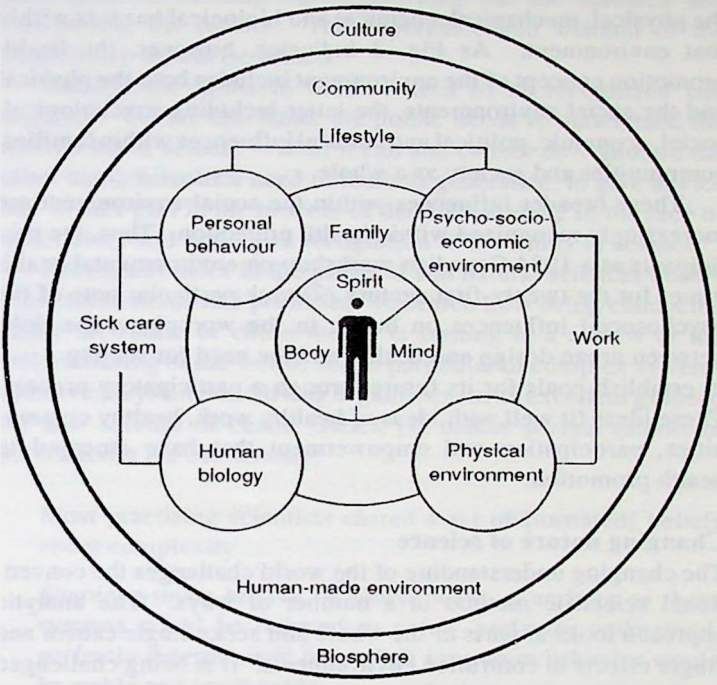


Fig. 2. The mandala of health: a model of the human ecosystem



Source: **Hancock, T. & Perkins,** F. The mandala of health. *Health education*, **24**(1): 8–10 (1985).

environmental health requires adding the strengths of the health promotion approach to the health protection approach, without losing the strengths of the latter. First, however, some substantive issues have to be addressed. These include philosophical issues related to the concept of the environment, the nature and practice of science and the nature of democracy, as well as the nature of the challenges of environmental health.

The concept of the environment

In health protection, the environment has usually meant the physical environment (natural and built) and the concept includes the physical, mechanical, chemical and biological hazards within that environment. As Fig. 2 indicates, however, the health promotion concept of the environment includes both the physical and the social environments, the latter including psychological, social, economic, political and cultural influences within families, communities and society as a whole.

These broader influences within the social environment are increasingly recognized within health protection. Thus, the participants at a 1984 Canadian workshop on environmental health issues for the twenty-first century *(7)* took particular note of the psychosocial influences on health in the workplace, the links between urban design and health, and the need for society to establish goals for its future through a participatory process. These ideas fit well with ideas of healthy work, healthy communities, participation and empowerment that have emerged in health promotion.

Changing nature of science

The changing understanding of the world challenges the conventional scientific method in a number of ways. The analytic approach looks at parts of the whole and seeks single causes and single effects in controlled environments. It is being challenged by the need to take a holistic approach that looks at whole systems and conditions with multiple causes and multiple effects in the context of real life. The objective approach of science portrays the scientist as a value-free observer of quantifiable facts. This is challenged by the need to recognize that scientists are influenced by their culture and can never be simply dispassionate observers. This need is particularly important when such value-laden issues as human health and environmental quality are concerned. People's subjective experience is just as important as the objective measurement of their condition.

Further it is believed that only trained scientists do science and that they report their results to an untrained populace. This notion

is being replaced by the recognition that research in communities needs to be participatory in nature. The community should participate in defining topics, carrying out the research and interpreting the results. The experience and wisdom of the community should be valued.

Finally, the limits to science need to be recognized and clarified. On the one hand, the public needs to understand the limitations of science – what it can and cannot do – and, on the other hand, scientists need to learn to generalize, to give advice and to take part in the process of decision-making in the face of uncertainty and with open recognition of the limits of science."

Recent advances in the physical and natural sciences underscore these needs and priorities. Research now being conducted under the rubric of chaos theory is leading to a review of the understanding of the world, and in particular of complex systems such as ecosystems and living organisms. In an excellent guide to the new science of chaos, Gleick *(9)* makes several important points about the old science:

> Most practising scientists shared a set of [unstated] beliefs about complexity ...
>
> *Simple systems behave in simple ways* ... as long as these systems could be reduced to a few perfectly understood, perfectly deterministic laws, their long-term behavior would be stable and predictable.
>
> *Complex behavior implies complex causes* ... a wildlife population, a fluid flow, a biological organ, ... an atmospheric storm or a national economy – a system that was visibly unstable, unpredictable or out of control ... must either be governed by a multitude of independent components or subject to random external influences.

" A paper by Yvonna Lincoln *(8)* gives an excellent review of the points made here in the context of health promotion research and evaluation. It is all the more notable since Lincoln was President of the American Evaluation Society when she delivered it.

> *Different systems behave differently* ... Scientists ... knowing that the components of their disciplines were different, took it for granted that the complex systems made of billions of these components must also be different.

These beliefs, of course, still have wide currency in daily social and political life; people assume that they cannot understand or manage complex systems, that they have to reduce everything to simple models in order to understand and control it, and that different disciplines have little in common and little to learn from each other. Other common beliefs are: that change is essentially linear, that complex systems are relatively stable and robust, and that minor differences in input to a system have little effect on its behaviour.

The scientific concept of chaos has turned all that on its head. Research based on chaos theory is providing evidence of the underlying order in disorder: stable patterns emerge out of irregularity. Newer evidence shows the need to see the pattern and the whole, rather than the parts. Chaos is "the end of the reductionist program in science"; "a science of process rather than state, of becoming, rather than being" is emerging. In particular, the science of chaos means recognizing that:

> Simple systems give rise to complex behavior. Complex systems give rise to simple behavior. And most important, the laws of complexity hold universally ...

Chaos means that change in complex systems can be non-linear and that "tiny differences in input could quickly become overwhelming differences in output"; complex systems turn out to be less robust and stable than we like to believe *(9)*.

Recognition of this new understanding of nature is only slowly spreading from the realm of natural science to that of social science and politics; the implications for people's understanding of the world and the decisions they make are profound. In short, the new science that is emerging has holistic, qualitative, subjective and participatory qualities and acknowledges its limitations in the face of uncertainty.

Implications for health research

The recent gains in knowledge outlined above have implications for the health sciences. For example, research on the health impact of environmental influences will have to consider effects on the ecosystem as a whole, including the range of species and organisms as a whole, over their entire lifetimes. This will mean using wildlife markers of health effects (such as birth abnormalities in birds and tumours in fish), looking at lifetime exposure and paying much more attention to a wider range of health variables in both animals and humans, including behavioural, neurological and immunological effects.

Research on human health needs to pay more attention to people's perceptions and self-reported health. This is an area in which health promotion research can contribute its experience in self-assessment of health. Another important area in which health promotion can contribute is the process of community development, and particularly the processes of adult and popular education. These lie at the heart of the participatory research approach that the new science will require.

Democracy: representation or participation?

Health protection is based on a model of democracy in which experts and elected politicians make decisions on behalf of the general public. This somewhat paternalistic and frequently secretive style of decision-making is a legacy of the democratic system developed in the eighteenth and nineteenth centuries and strengthened throughout most of the twentieth century.

Times have changed. The populace is better educated and, through the mass media, better informed about conditions in their communities and matters of scientific and national concern. Distrust has grown out of decisions made by experts and politicians behind closed doors, and demands have increased for greater public participation in all aspects of society. People want not merely to be represented but to participate. This is particularly true of matters that affect their health, their quality of life and the quality of their environment, at the community level in particular. The twenty-first century will be "the age of participatory democracy" *(7)*.

Health promotion's commitment to public participation and community empowerment challenges the more traditional decision-making processes of health protection. Health promotion is thus very much in tune with the new approach to democracy. This is clear in the definition of health promotion as "the process of enabling people to increase control over and improve their health", a statement that is as true for the health of the environment as for personal health.

Key issues in environmental health promotion

A synthesis of health protection and health promotion suggests four levels at which the physical and social environments are brought together in the settings of everyday life. These settings are:

- individuals and what they breathe, drink and eat;
- the building, including the home, the school, the workplace, the health care institution and other built environments;
- the community, whether it is a city, a neighbourhood, a town, a village or a hamlet; and
- the natural environment and the global ecosystem.

Affecting all of these, however, is another key issue for environmental health promotion: the need to reduce inequalities in health (and thus in environmental quality) in these settings.

Environmental inequity

In health promotion, the environment is both physical and social, and the two are not easily divorced; poor physical environments are usually associated with poor social environments. No matter the hazard – general environmental pollution, dangerous working conditions, poor quality housing or unsafe products – the poor in society usually suffer the worst and have the most adverse health consequences; it is the poor who live downhill, downstream or downwind. Recognizing that the environment has a social dimension is a major issue in health promotion, and a major contribution that health promotion can make to health protection. Access

to a clean, safe, health promoting environment is a fundamental determinant of good health, and inequities in access to such an environment have to be addressed and corrected at the personal, community and global levels.

The individual

People are exposed to a wide variety of chemicals *in utero*, by ingestion (via air, water, food and soil) and by contact. What most concerns them is the cumulative effect of the multitude of chemicals they breathe, drink and eat in what has become an ecotoxic environment *(10)*[a]. The protection of individuals needs to be combined with health promotion strategies that enable them to have greater control over their environments and greater choice about what they breathe, drink and eat.

The building

Health promotion is concerned with the qualities of key environments (such as the home, the workplace, the school and the health care institution) that can promote and protect health. Recognizing that all of these environments have both a physical and a social nature, however, health promotion is equally concerned with the extent to which they are socially or psychologically hazardous and how people can control and improve their environments.

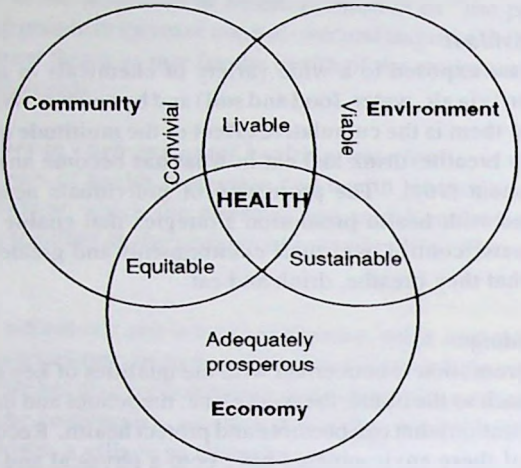
The urban community

Health promotion, through the movement to promote healthy communities, seeks to address a broad range of environmental issues, including air and water quality, the environmental consequences of urban design, transport, waste management, energy use and a host of related topics. Again, the focus is as much on the process of creating a healthier environment as on the actual changes required. An adaptation of Fig. 1, Fig. 3 shows how the environment, the economy and the community are interrelated with one another and with health.

---

[a] Ecotoxicity is the contamination of entire ecosystems and the organisms in them (including humans) with low levels of many persistent toxic chemicals and heavy metals.

Fig. 3. Interrelationships: the environment, the economy, the community and health



For good health, people need an environment that is viable, an economy that generates enough resources to enable them to be healthy, and a community that is convivial. The community needs to construct environments that are livable and to ensure the equitable distribution of resources while maintaining environmental sustainability.

The natural environment

Health promotion recognizes that achieving health for all requires a worldwide shift to an environmentally sustainable form of economic development. Links between health promotion and sustainable development, and, more explicitly, between health, the environment and the economy, are of particular interest, and reflect the social, economic and political nature of health promotion. The health costs of unsustainable economic development

have to be spelled out and the health benefit of sustainable development determined. In short, a health promotion agenda in environmental health would include four interrelated issues in the way that people experience their daily lives:

— healthy air, water, soil and food (and ecotoxicity);
— healthy built environments (such as homes, schools, workplaces and institutions);
— healthy communities;
— healthy ecosystems (including both sustainable development and ecotoxicity).

Environmental health promotion strategies

The Ottawa Charter for Health Promotion, along with Canada's health promotion framework *(11)*, provides a framework and strategies for promoting environmental health:

— establishing healthy public policies
— reducing inequalities in environmental health
— strengthening community action and fostering public participation
— developing personal coping and self-care skills.

The following discussion highlights these strategies.

Environmental health promotion projects

This section describes projects for environmental health that health promotion groups could carry out in conjunction with health protection groups and other partners within and outside government. It specifically excludes the toxicological aspects of exposure to contaminants in air, food, soil and water (except as a consequence of the action proposed below), since this area is clearly within the mandate and technical expertise of the health protection authorities. Rather, the projects focus on how to promote physical and social environmental health in particular settings: the home, the school, the workplace, the hospital and

the community. Knowledge, skills, processes and technology need to be developed in each of these areas to create healthier environments.

Healthy homes

North Americans spend 75-90% of their time indoors, much of it in their own homes. These homes present a variety of health hazards, including unsafe design and construction, energy inefficiency (or the opposite, sealed buildings), and toxic construction materials, fabrics and furnishings, to name but a few. In addition, housing design is often harmful to mental and social wellbeing.

Further, people use a vast array of household products that present varying degrees of hazard to human or environmental health. Two major environmental health promotion projects would encourage and support the building of healthy homes and the development, marketing and use of less toxic household products.

A healthy housing project should begin by examining existing building codes and health standards in the light of current knowledge and new practices about the effects of housing on physical, mental and social wellbeing. This would lead to proposals to change public policy on and standards for housing design at all levels of government. Particular attention should be paid to the housing conditions of the most disadvantaged groups in society. Public policies and community development strategies should enable such groups first to obtain shelter and then to increase their control over their housing conditions and to take part in designing or redesigning their living conditions, a process known as community architecture *(12)*. Potential partners in this project would include: national and other authorities responsible for housing standards, national associations and local groups of architects, academics concerned with housing and the built environment, local governments, developers and key tenant and householder groups. The United Nations Centre for Human Settlements would be an obvious international partner.

A healthy products project would encourage public policy incentives (and regulations if need be) to encourage healthier

household products. An obvious place to begin is the growing number of programmes that review products for their environmental "friendliness"; it would be comparatively simple to add an assessment for their health effects. Ministries of consumer affairs, consumers' associations and the associations of people in the household products industry would obviously be key partners. At the local level, public education to increase awareness of the relative merits of different products, particularly adult education of the self-help or mutual aid type, should be supported. Mechanisms to do this with groups with low literacy should be explored. These efforts could perhaps be coupled with education about the availability of cheaper alternatives.

Healthy schools

In dealing with health, schools have primarily if not exclusively emphasized its physical and behavioural determinants. As is the case for housing, much could be done to improve the physical environment of schools, and to promote education about environmental health *(13)*.

A project on healthy school environments would share many of the concerns of the first two projects. Particular attention should be paid to the effects of the environment on children's development and behaviour, and to the provision of green space and a sense of connectedness with nature. Particular attention should also be paid to conditions in schools with large numbers of disadvantaged children. The concepts of community architecture should be applied by, for example, involving children in examining their schools and redesigning them to be both healthier and friendlier to the environment. Likely partners would include associations of school boards, teachers and parents at the local, provincial and national levels, and ministries of education, in addition to the partners in the healthy housing project.

An environmental health education project would build on existing links with the school health education community to develop curricula and materials that emphasize the links between health and the environment. Projects to involve children in examining the health of their environments in school, at home and

in the neighbourhood would be both educational and empowering if linked to action to improve environmental health. Scientists and environmental science teachers would be important additional partners here, and the project could be linked to healthy housing and healthy community projects.

Healthy workplaces

Occupational health and safety programmes tend to focus on physical, chemical and mechanical hazards in the workplace. Increasing evidence, however, shows that the psychological and social environments of work affect not only mental and social wellbeing but also physical health *(14)*. Clearly, the workplace is an area in which the marriage of health promotion and health protection would be beneficial.

A project to create the healthiest workplace possible would address the physical, mental and social components of work, including industrial hygiene, occupational medicine, ergonomics, worker participation and empowerment, and workplace health promotion. The project should obviously enable workers to increase control over and improve their health. It could be developed and implemented in selected pilot sites. Key partners would include ministries of labour, occupational health and safety agencies, key employer organizations and trade unions, organizations concerned with the quality of working life and academics.

Healthy hospitals

If any environment created by humans should promote health, it is the hospital. Yet hospitals often do just the opposite. They suffer from problems of unsafe design and problems with indoor air quality compounded by the use of many toxic or irritant substances. They often provide noisy, unfriendly, badly lit and alienating social environments. They use vast quantities of disposable products, do not use energy efficiently and have problems with waste disposal and incineration practices. In short, hospitals are often less than the healing and sustainable environments that they should be.

Now, however, health professionals, particularly those working in hospitals, are showing an unprecedented interest in

environmental health and sustainable development. A healthy hospitals project would build on this interest by bringing together key players in this vital sector of the economy (which accounts for some 6-12% of GNP in industrialized countries) to devise healthy and environmentally sustainable hospitals. The project would cover topics that included products, policies and procedures. Hospital staff, patients and the public should be involved in the process, which in effect would apply community architecture to hospital design. Important partners would include national and local associations of health professionals, the pharmaceutical industry, the medical and surgical supply industry and hospital architects.

Healthy communities

Projects for healthy communities (such as the WHO Healthy Cities project and various Healthy Communities projects) are now well established in many countries. They provide a useful vehicle for addressing the environmental components of a healthy city or community, and particularly the links between sustainable development and health. This of course interests the environmental movement, but also attracts local governments, which are increasingly environmentally aware.

A project for a healthy and sustainable community would focus specifically on the integration of health, environmental and economic concerns at the local level. New communities should certainly be designed to do this, but the greatest challenge would be to redesign existing communities. Such a project would entail collaborative research, workshops, conferences and the development and application of new policies, criteria and codes for existing and proposed urban development. The people, especially those experiencing the worst environments, need to be involved in redesigning their communities. It is particularly important that the movement to "green" communities not neglect social sustainability in this work.

In addition to national and local healthy city or community projects, important partners would include the national ministries of environment and municipal affairs, related ministries and their

local or regional equivalents. Other partners would include municipal politicians, "green" business, the environmental movement, urban planners and the development industry.

Conclusion

The links between health and the environment, and between health for all and sustainable development, are of great public and political interest. It is vital that the lessons learned in health promotion be applied to the protection and improvement of the health of the environment and the people living within it. Promoting environmental health calls for the development of healthy and environmentally sustainable public policies (including the reduction of inequalities in environmental health), the strengthening of community action and public participation in the creation of healthier environments, and the development of personal skills in the protection and promotion of environmental health. Projects should be developed that address the environments that people experience every day in their homes, schools, workplaces, institutions and communities. This will call for the establishment of broad coalitions including the architectural, planning, design and development sectors of society, which currently play little role in the promotion of environmental health.

References

1. **World Commission on Environment and Development.** *Our common future*. Oxford, Oxford University Press, 1987.
2. **International Union for Conservation of Nature and Natural Resources.** *World conservation strategy: living resources conservation for sustainable development*. New York, NY, UNIPUB, 1980.
3. *Health dimensions of environmental issues*. Ottawa, Canadian Public Health Association, 1990 (document).
4. **Hancock, T.** *Sustaining health*. Ottawa, Health and Welfare Canada (in press).

5. **Osberg, L.** *Sustainable social development*. Halifax, Department of Economics, Dalhousie University, 1990 (document).
6. **Lovelock, J.E.** *Gaia: a new look at life on earth*. Oxford, Oxford University Press, 1979.
7. *Environmental health issues for the 21st century*. Ottawa, Health and Welfare Canada, 1986.
8. **Lincoln, Y.** *The paradigm revolution: fourth generation evaluation and health promotion*. Toronto, Centre for Health Promotion, University of Toronto, 1990.
9. **Gleick, J.** *Chaos: making a new science*. New York, NY, Viking Penguin, 1987.
10. **Chant, D. & Hall, R.** *Ecotoxicity*. Ottawa, Canadian Environmental Advisory Council, 1978.
11. *Achieving health for all*. Ottawa, Health and Welfare Canada, 1986.
12. **Knevitt, C. & Wates, N.** *Community architecture*. London, Penguin, 1987.
13. *Healthy schools*. Edinburgh, Scottish Health Education Group, 1990.
14. **Karasek, R. & Theorell, T.** *Healthy work*. New York, NY, Basic Books, 1989.

Health and social environments: facing complexity in health promotion research[a]

Kathryn Dean[b]

My topics are the social network and the social support derived from networks, and my task to address issues debated by researchers concerned with how the social environment affects health. The source of the debate is disagreement about whether health benefits derived from the social environment arise primarily from being integrated – embedded is a term often used – in a network of social relationships or from support and help provided in the social network when needed.

The research issue inherent in this manner of posing the question is the long-debated subject of whether the health benefits of social support are direct or buffering effects. This issue seems to be well resolved. Cohen & Syme (*1*) interpreting the findings in their overview of the literature on social support, conclude that enough evidence is available to document both direct effects from social support and buffering effects derived from social networks' reducing the consequences of stress. They point out that the direct effects generally occur when the measure of support assesses the

[a] This paper was originally prepared for the Social Support and Health Symposium of the XIV World Conference on Health Education, Helsinki, Finland, 16–21 June 1991.

[b] Senior Researcher, Institute of Social Medicine, University of Copenhagen, Denmark.

degree to which people are integrated in networks, while buffering effects are found when the measure focuses on the availability of resources for help in responding to stressful events.

Multiple dimensions of supportive social environments

While research has provided apparently conclusive evidence of both direct and stress-buffering benefits from social support, the distinction between integration in and support from a network covers far more than the traditional issue of direct or indirect statistical effects. Integration in a network of social relationships is not a simple, straightforward matter, but involves complex, multidimensional processes of belonging; these in turn have equally complex and multidimensional consequences. For example, people's personal behavioural and emotional characteristics influence their integration and participation in social networks. This touches on another issue in the social support research literature. There is evidence that variables representing personal functioning, depression or psychological distress may account for relationships between social support and health *(2)*. Further, the type and extent of integration depend on the cultural and structural aspects of particular networks, such as the role of the family, the position of women, the distribution of income and the availability of public support services.

The consequences of integration in a social network are also multidimensional. Networks can affect health negatively as well as positively, constraining rather than improving personal functioning, for example.

Pathways of influence

The multiple dimensions mentioned above are reflected in the inconsistencies and contradictions in the research literature on social support and health, particularly the fundamental variations in the findings according to sex, race and geographic location. The evidence on cardiovascular diseases is the most confusing and contradictory. The subgroup differences in mortality risk, particularly those according to sex and race, are serious research issues *(3,4)*.

The nature of any causal influence, and questions about intervening influences or the possibility that spurious statistical correlations account for the findings are still issues in assessing the evidence on the influences of the social network and social support on health. The possible pathways of influence are extensive. In an earlier paper, I outlined five different potential pathways through which social support variables might influence health variables. Over the course of life, these options are probably parallel and alternating, rather than alternative pathways (5).

1. Network contact and support may directly benefit physiological and psychological variables.

2. Health benefits may arise from protection against stress achieved by preventing or reducing the amount of stress experienced or protecting against the effects of stress when it occurs.

3. Elements of the larger social environment (such as income, employment and other forms of opportunity or barrier created by the social structure) that affect health may also influence the network variables or be spuriously correlated with them.

4. Personal characteristics (such as personality factors or communication skills) may both reduce stress and create social support.

5. Lifestyle patterns that involve stressful daily routines or the use of harmful substances may either account for the statistical associations between social support and health or interfere with supportive human interaction.

Exploring the research issues

In the research literature, explanations for the inconsistencies and contradictions in the findings on social support and health are generally speculations about group cohesiveness, the ability to maintain ties, or some other possible characteristic of the subgroup

for which the expected statistical relationships are not found *(6,7)*. It has also been suggested that the critical dimensions of social networks have not been measured in people for whom support is particularly important or that, in cohesive groups, social contacts may be so much a part of everyday life that they are not reported *(3)*.

These explanations build on the assumption that the statistical correlations between social network and morbidity or mortality (particularly the latter) tap some particular causal influence. When methodological issues are raised, they generally concern the possible inadequacy of measures of social support for specific subgroups. Another possibility, however, is that the measures and the way they are used in the analysis of population data may result in distortions in the findings.

We have been exploring these research issues in data from samples of the populations of Denmark and the United States. The latter data set, now the focus of attention, is based on information provided by a sample of the non-institutionalized civilian population between 20 and 64 years of age. The investigation was designed to study behavioural and social network influences on health in a national sample to see whether the findings from earlier studies in different geographical areas would be replicated in a study of the national population.

The major goal of the analysis of these data is to elaborate the interrelationships of socioeconomic, social support, behaviour and health variables. Central research questions have to do with whether behavioural variables modify statistical relationships between social support and health variables, and how socioeconomic status affects the interrelationships of social network, behavioural and health variables. Thus, the concern is not the prediction of independent statistical associations, but the elaboration of levels of influence and interactions between types of influence. We already know that correlations exist between social network and health variables. It is now important to focus research on conditions of influence, the characteristics of networks and individuals that combine to damage or protect health *(8)*.

The first task was to make sure that the tool used to study network support is a valid measure. To study the United States sample, the tool to measure social support was a composite index constructed from both subscales and individual items based on single questions. Three subscales, called group membership, sociability and intimate contacts, were used to create this composite measure. The group membership subscale was based on questions about membership in social and community groups. The sociability subscale combined information from questions about the number of friends and relatives a person has and the frequency of contact with the relatives. Sociability scores were then combined with marital status to make the intimate contacts subscale. Finally, the composite index was created by combining the intimate contacts and group membership subscales and adding a question about church membership. The index was an attempt to create a single measure of integration in and support from social networks.

Measurement, the basic tool of science

The validity and meaningfulness of the relationships found between social support and health depend on the soundness of the instruments used to measure the variables, and on the appropriate use of the instruments in the analysis of the data collected in the study. Therefore, the composite social support scale had to be assessed as a measure of the theoretical concept of social support, and to find out whether using it in the analysis of the data would change or hide the effects of other causal influences.

Examining the scale as a measure of the theoretical domain of social support led to questions about what the composite index actually measured. Network structure, network participation and social contact were combined in a manner that might create conceptual overlap that would interfere with the validity of the composite scale as a measure of any of the different dimensions of the social network. Further, the structure of the network or the amount of social contact does not necessarily assure stress-mitigating network support.

The theoretical concerns were reinforced by the validation procedures to detect item bias and the potential distorting effects of using the scale in multivariate analyses (9). The results of the validation showed that both the items of the subscales and the subscales themselves were correlated with health, psychosocial and socioeconomic variables in ways that would seriously distort the outcome of an analysis employing the scale to represent social support. This meant that, in addition to the problem of confusing network structure, integration and support, using the scale could hide the effects of other influences on health. For example, the items of the group membership subscale were systematically correlated with education, income and employment status. In interpreting the results of an analysis that included this scale, it would be impossible to determine the extent to which the effects of social situation and socioeconomic status variables were distorted or hidden. The same problem was found with perceived health status.

Similar problems were found in the assessment of the sociability subscale, and the intimate contacts subscale that builds on it. Individual items were confounded with employment status, income and sex, meaning that the sociability subscale could hide the effects of these fundamental influences in the analysis of the data. Finally, in addition to the consistent problems with social situation variables, there were also sporadic signs of item bias in relation to morbidity variables: bed days, functional ability and psychological distress.

In light of the theoretical concerns and the results of the validation analysis, it was necessary to conclude that the individual items rather than the composite scale or the subscales, would have to be included in the multivariate analyses for a valid study of relationships between social network, social support, socioeconomic status and health variables.

Elaboration of levels and types of influence

Since the goal of this research is to study direct and indirect relationships among different types of variables, statistical methods are needed that can elaborate interrelationships among many complex categorical variables and test for levels of influence.

Most widely used statistical procedures cannot achieve this goal. The procedures used in the study are based on mathematical graph models *(10)*. These procedures allow a theoretically derived structure to be given to the analysis of the data. Using a theoretically derived analytical model permits an examination of complex relationships, while minimizing the number of fallacious correlations that can be produced by statistical modelling.

Only preliminary results are now available, but they allow some conclusions to be drawn about the inconsistencies in the social support literature. The most relevant findings concern the interrelationships among the social support and social situation variables. Married people reported a greater number of close relatives and more often were members of a church. They also reported higher incomes. Being a member of a church was in turn independently related to the total number of friends and relatives, to the number of close relatives and to the number of close friends. Church membership was also related to alcohol and tobacco consumption, but not to health variables.

The nature of the relationships differed considerably for women and men. While the relationship between marital status and income held for both women and men, a smaller proportion of women was married. Also, marital status and financial problems were related for women, but not for men. Interactions among behavioural, social network and socioeconomic variables also differed in fundamental ways for men and women.

In short, social network variables that had been included as items in the subscales of the composite scale were related to socioeconomic variables. At the same time, both types of variable were statistically related to behavioural habits that may affect health. The findings illustrate clearly how easily different types of influences in the life situation are confounded in statistical scaling and modelling.

Facing or avoiding complexity in research on health

What conclusions can be drawn from these preliminary findings about the major issues in the social support literature? Does

integration in a social network predict health outcomes? Is integration more or less important than network support in buffering stress? Do relationships between social network variables and morbidity or mortality remain after controlling for personal functioning? The most important conclusion to draw from the findings is that these are the wrong questions. These questions and similar ones in discussions of inconsistent findings from research on other types of risk factor arise from a narrow scientific model that concentrates on direct causal effects. The deductive experimental model has been viewed as the method providing the greatest scientific rigour in most research on health in the twentieth century. This method, borrowed from the natural sciences, seeks to predict cause-and-effect relationships.

In survey research on populations, the influence of the reductionistic scientific model has taken the form of analysing risks or predicting outcomes while controlling for other factors that might account for the findings. Most research on health now acknowledges that the factor under consideration is not the only causal influence. Nevertheless, it remains the focus of attention in most instances. Even when several factors are examined, they are generally treated as independent. This happens both because of the focus on cause and effect in positivistic thinking and because widely used statistical models are incapable of dealing with complexity.

It is not surprising that social support has become both a popular and a disputed subject in health research. Intuitively, everyone who has worked in health realizes the importance of the social network. At the same time, it is the type of research topic least amenable to cause-and-effect thinking and to static quantitative analytic models.

Contextual research: the health promotion challenge

Contextual research is both extremely important for promoting the health of populations and particularly vulnerable to confounding in measurement. The natural sciences, from which reductionistic

methods were adopted, have moved beyond the type of causal thinking still prevalent in research on health. Since Niels Bohr illustrated the illusion of controllable measurement processes, it has been recognized that the parts of a phenomenon cannot meaningfully be separated. Discrete causes and discrete outcomes, useful to consider for some heuristic purposes, have little to do with the dynamic, complex processes that create and maintain human health *(11)*. Research on social support and health may be taken as a case in point.

The composite scale described above is an attempt to create a tool for use in predicting health outcomes. Such a scale is used in many investigations of the influence of the social network on health. The goal of predicting health outcome is often achieved, particularly when the outcome is death. This is not at all surprising, since, as the scale validation findings show, this type of scale hides or distorts the effects of other types of variables that either affect health or are affected by declining health.

These considerations highlight two issues in health promotion research. The first has to do with the confusion created by the excessive preoccupation with prediction in health research. The overemphasis on predicting statistical effects, in contrast with the elaboration of the interrelationships of variables, has limited rather than expanded knowledge.

Numerous risk factors for disease have been identified (over 246 for coronary heart disease alone *(12)*. In research and programmes concerned with these risks, causation is often implied, even though it is well known that finding a statistical relationship between a factor and a pathological deviation (even when major confounding or contributing factors are controlled for, which is seldom done) does not mean that the factor causes the deviation. Multicausal processes lead to disease, and a single factor may be either part of the interacting processes or simply spuriously correlated with some causal influence not included in the study *(13)*.

The public intuitively recognizes these problems. Popular reactions to the escalation of risk factors have begun to appear, exemplified by an article in a Danish newspaper with the headline

"informationssyge skader sundheden" (a play on words, meaning that sickness in health information damages health). The subject of the article was the confusing information with which the population is constantly bombarded. A drawing showed a man with his eyes shut tightly and ears covered, surrounded by a printed message growing larger and larger and saying that smoking causes lung cancer. A similar report recently appeared on an international television broadcast. A car bumper sticker with the message "life is a risk for cancer" had begun to appear in the United States. The report pointed out that the sticker revealed that the more important messages can no longer get through the barrage of confusing information. The general population may not have access to information on the research issues, but people know well that spry old Aunt Jane and Cousin Tom have been exposed to risks A, C or Z for 30 to 40 years or more.

Ironically, the message on the bumper sticker calls attention to another issue that needs to be considered in health promotion research: the meaningfulness of mortality as a health indicator. Mortality might be a useful indicator in studies of traffic accidents or suicides. Death rates, particularly in infants, can tell a great deal about the level of development of a society, but almost nothing about the processes involved in the preservation or breakdown of human health. At best, death can be seen as the final consequence of multiple assaults on the biopsychosocial organism[a] over the course of life *(14)*.

These are reasons why research on social support and health should focus on processes of influence rather than predicting statistical effects. An understanding of the parallel and relative influences on health of the social network and social support requires that network structure, social contact, instrumental support, psychosocial support and other aspects of the social environment be disentangled from each other and from variables measuring personal social functioning. Thereafter, they can be fruitfully

[a] This term, which is coming into use, reflects the social and psychological as well as the biological aspects of human beings.

examined, along with socioeconomic and cultural influences, using research designs and methodological approaches that can study the social contexts that create and maintain health.

The statistical analysis of complex forces affecting health should be conducted with methods that can focus on the interrelationships of variables. The limits of all statistical procedures need to be recognized in testing and reformulating theories. Only interdisciplinary work and a range of methodological approaches can build a body of knowledge on the complex influences shaping health.

References

1. **Cohen, S. & Syme, S.** Issues in the study and application of social support. *In:* Cohen, S. & Syme, S., ed. *Social support and health*. Orlando, FL, Academic Press, 1985.
2. **Henderson, S.** Interpreting the evidence on social support. *Social psychiatry*, **19**: 49 (1984).
3. **Berkman, L.** Assessing the physical health effects of social networks and social support. *Annual review of public health*, **5**: 413 (1984).
4. **Berkman, L.** Social networks, support and health: taking the next step forward. *American journal of epidemiology*, **123**: 559 (1986).
5. **Dean, K.** Social support and health: pathways of influence. *Health promotion*, *1*: 33 (1986).
6. **Schoenbock, V. et al.** Social ties and mortality in Evans County. *American journal of epidemiology*, **123**: 577 (1986).
7. **House, J. et al.** Social relationships and health. *Science*, **241**: 540 (1988).
8. **U.S. National Center of Health Statistics**. *Public use data tape documentation. National survey of personal health practices and consequences*. Hyattsville, MD, Office of Health Research, Statistics and Technology, US Department of Health and Human Services, 1982.

9. **Kreiner, S.** *Validation of index scales for analysis of survey data.* Paper presented to the Workshop on Methodological Problems and New Methods for the Analysis of Population Survey Data, April 1990. Copenhagen, WHO Regional Office for Europe, 1990 (document).
10. **Whittaker, J.** *Graphical models in applied multivariate statistics.* New York, NY, John Wiley & Sons, 1990.
11. **Kickbusch, I. & Dean, K.** *Research for health: challenge for the nineties.* Amsterdam, Elsevier (in press).
12. **Hopkins, P. & Williams, R.** A survey of 246 suggested coronary risk factors. *Atherosclerosis*, **40**: 1 (1981).
13. **Dean, K.** Nutrition education research in health promotion. *Journal of the Canadian Dietetic Association*, **51**: 481 (1990).
14. **Dean, K.** Research for health promotion: issues for the future. *In:* Kelleher, C., ed. *The future of health promotion: Proceedings of the Launch Conference of the Centre for Health Promotion Studies.* Galway, Social Science Research Centre Publications (in press).

The Sundsvall Declaration on Supportive Environments

Sundsvall statement on supportive environments for health

The Third International Conference on Health Promotion: Supportive Environments for Health – the Sundsvall Conference – fits into a sequence of events which began with the commitment of WHO to the goals of Health For All (1977). This was followed by the UNICEF/WHO International Conference on Primary Health Care, in Alma-Ata (1978), and the First International Conference on Health Promotion in Industrialized Countries, in Ottawa (1986). Subsequent meetings on Healthy Public Policy, in Adelaide (1988) and a Call for Action: Health Promotion in Developing Countries, in Geneva (1989) have further clarified the relevance and meaning of health promotion. In parallel with these developments in the health arena, public concern over threats to the global environment has grown dramatically. This was clearly expressed by the World Commission on Environment and Development in its report ***Our Common Future****, which provided a new understanding of the imperative of sustainable development.*

The Third International Conference on Health Promotion: Supportive Environments for Health – the first global conference on health promotion, with participants from 81 countries – calls upon people in all parts of the world to engage actively in making environments more supportive to health. Examining today's

health and environmental issues together, the Conference pointed out that millions of people are living in extreme poverty and deprivation in an increasingly degraded environment that threatens their health, making the goal of Health For All by the Year 2000 extremely hard to achieve. The way forward lies in making the environment – the physical environment, the social and economic environment, and the political environment – supportive to health rather than damaging to it.

The Sundsvall Conference identified many examples and approaches for creating supportive environments that can be used by policy-makers, decision-makers and community activists in the health and environment sectors. The Conference recognized that everyone has a role in creating supportive environments for health.

A call for action

This call for action is directed towards policy-makers and decision-makers in all relevant sectors and at all levels. Advocates and activists for health, environment and social justice are urged to form a broad alliance towards the common goal of Health For All. We Conference participants have pledged to take this message back to our communities, countries and governments to initiate action. We also call upon the organizations of the United Nations system to strengthen their cooperation and to challenge each other to be truly committed to sustainable development and equity.

A supportive environment is of paramount importance for health. The two are interdependent and inseparable. We urge that the achievement of both be made central objectives in the setting of priorities for development, and be given precedence in resolving competing interests in the everyday management of government policies.

Inequities are reflected in a widening gap in health both within our nations and between rich and poor countries. This is unacceptable. Action to achieve social justice in health is urgently needed. Millions of people are living in extreme poverty and deprivation in an increasingly degraded environment in both urban and rural

areas. An unforeseen and alarming number of people suffer from the tragic consequences of armed conflicts for health and welfare. Rapid population growth is a major threat to sustainable development. People must survive without clean water or adequate food, shelter and sanitation.

Poverty frustrates people's ambitions and their dreams of building a better future, while limited access to political structures undermines the basis for self-determination. For many, education is unavailable or insufficient, or, in its present forms, fails to enable and empower. Millions of children lack access to basic education and have little hope of a better future. Women, the majority of the world's population, are still oppressed. They are sexually exploited and suffer from discrimination in the labour market and many other areas which prevents them from playing a full role in creating supportive environments.

More than a billion people worldwide have inadequate access to essential health care. Health care systems undoubtedly need to be strengthened. The solution to these massive problems lies in social action for health and the resources and creativity of individuals and their communities. Releasing this potential requires a fundamental change in the way we view our health and our environment and a clear, strong political commitment to sustainable health and environmental policies. The solutions lie beyond the traditional health system.

Initiatives have to come from all sectors that can contribute to the creation of supportive environments for health, and must be acted on by people in local communities, nationally by government and nongovernmental organizations, and globally through international organizations. Action will involve predominantly such sectors as education, transport, housing and urban development, industrial production and agriculture.

Dimensions of action on supportive environments for health

In a health context the term **supportive environments** refers to both the physical and the social aspects of our surroundings. It

encompasses where people live, their local community, their home, where they work and play. It also embraces the framework which determines access to resources for living, and opportunities for empowerment. Thus action to create supportive environments has many dimensions: physical, social, spiritual, economic and political. Each of these dimensions is inextricably linked to the others in a dynamic interaction. Action must be coordinated at local, regional, national and global levels to achieve solutions that are truly sustainable.

The conference highlighted four aspects of supportive environments:

1. The **social** dimension, which includes the ways in which norms, customs and social processes affect health. In many societies traditional social relationships are changing in ways that threaten health, for example, by increasing social isolation, by depriving life of a meaningful coherence and purpose, or by challenging traditional values and cultural heritage.

2. The **political** dimension, which requires governments to guarantee democratic participation in decision-making and the decentralization of responsibilities and resources. It also requires a commitment to human rights, peace, and a shifting of resources from the arms race.

3. The **economic** dimension, which requires a re-channelling of resources for the achievement of Health For All and sustainable development, including the transfer of safe and reliable technology.

4. The need to recognize and use **women's skills and knowledge** in all sectors, including policy-making, and the economy, in order to develop a more positive infrastructure for supportive environments. The burden of the workload of women should be recognized and shared between men and women. Women's community-based organizations must have a stronger voice in the development of health promotion policies and structures.

Proposals for action

The Sundsvall Conference believes that proposals to implement the Health For All strategies must reflect two basic principles:

1. **Equity** must be a basic priority in creating supportive environments for health, releasing energy and creative power by including all human beings in this unique endeavour. All policies that aim at sustainable development must be subjected to new types of accountability procedures in order to achieve an equitable distribution of responsibilities and resources. All action and resource allocation must be based on a clear priority and commitment to the very poorest, alleviating the extra hardship borne by the marginalized, minority groups, and people with disabilities. The industrialized world needs to pay the environmental and human debt that has accumulated through exploitation of the developing world.

2. Public action for supportive environments for health must recognize the **interdependence** of all living beings, and must manage all natural resources taking into account the needs of coming generations. Indigenous peoples have a unique spiritual and cultural relationship with the physical environment that can provide valuable lessons for the rest of the world. It is essential therefore that indigenous peoples be involved in sustainable development activities and negotiations be conducted about their rights to land and cultural heritage.

It can be done: strengthening social action

A call for the creation of supportive environments is a practical proposal for public health action at the local level, with a focus on settings for health that allow for broad community involvement and control. Examples from all parts of the world were presented at the Conference in relation to education, food, housing, social support and care, work and transport. They clearly showed that supportive environments enable people to expand their capabilities and develop self-reliance. Further details of these practical proposals are available in the Conference report and handbook.

Using the examples presented, the Conference identified four key public health action strategies to promote the creation of supportive environments at community level.

1. **Strengthening advocacy** through community action, particularly through groups organized by women.

2. **Enabling communities** and individuals to take control over their health and environment through education and empowerment.

3. **Building alliances** for health and supportive environments in order to strengthen the cooperation between health and environmental campaigns and strategies.

4. **Mediating** between conflicting interests in society in order to ensure equitable access to supportive environments for health.

In summary, empowerment of people and community participation were seen as essential factors in a democratic health promotion approach and the driving force for self-reliance and development.

Participants in the Conference recognized in particular that education is a basic human right and a key element to bring about the political, economic and social changes needed to make health a possibility for all. Education should be accessible throughout life and be built on the principle of equity, particularly with respect to culture, social class and gender.

The global perspective

Humankind forms an integral part of the earth's ecosystem. People's health is fundamentally interlinked with the total environment. All available information indicates that it will not be possible to sustain the quality of life, for human beings and all living species, without drastic changes in attitudes and behaviour at all levels with regard to the management and preservation of the environment.

Concerted action to achieve a sustainable, supportive environment for health is **the** challenge of our times.

At the international level, large differences in per capita income lead to inequalities not only in access to health but also in the capacity of societies to improve their situation and sustain a decent quality of life for future generations. Migration from rural to urban areas drastically increases the number of people living in slums, with accompanying problems including a lack of clean water and sanitation.

Political decision-making and industrial development are too often based on short-term planning and economic gains, which do not take into account the true costs to our health and the environment. International debt is seriously draining the scarce resources of the poor countries. Military expenditure is increasing, and war, in addition to causing deaths and disability, is now introducing new forms of ecological vandalism.

Exploitation of the labour force, the exportation and dumping of hazardous waste and substances, particularly in the weaker and poorer nations, and the wasteful consumption of world resources all demonstrate that the present approach to development is in crisis. There is an urgent need to advance towards new ethics and global agreement based on peaceful coexistence to allow for a more equitable distribution and utilization of the earth's limited resources.

Achieving global accountability

The Sundsvall Conference calls upon the international community to establish new mechanisms of health and ecological accountability that build on the principles of sustainable health development. In practice this requires health and environmental impact statements for major policy and programme initiatives. WHO and UNEP are urged to strengthen their efforts to develop codes of conduct on the trade and marketing of substances and products harmful to health and the environment.

WHO and UNEP are urged to develop guidelines based on the principle of sustainable development for use by Member States.

All multilateral and bilateral donor and funding agencies such as the World Bank and International Monetary Fund are urged to use such guidelines in planning, developing and assessing development projects. Urgent action needs to be taken to support developing countries in developing their own solutions. Close collaboration with nongovernmental organizations should be ensured throughout the process.

The Sundsvall Conference has again demonstrated that the issues of health, environment and human development cannot be separated. Development must imply improvement in the quality of life and health while preserving the sustainability of the environment.

The Conference participants therefore urge the United Nations Conference on Environment and Development (UNCED), to be held in Rio Janeiro in 1992, to take the Sundsvall Statement into account in its deliberations on the Earth Charter and Agenda 21, which is to be an action plan leading into the 21st century. Health goals must figure prominently in both. Only worldwide action based on global partnership will ensure the future of our planet.

This Statement was adopted on 15 June 1991 in Sundsvall, Sweden, by participants at the Third International Conference on Health Promotion: Supportive Environments for Health, the first global conference on the interdependence between health and environment in its physical, cultural, economic and political dimensions.
