

**THE ASSESSMENT, PREVENTION AND CONTROL OF HEALTH RISKS
IN TOURIST ESTABLISHMENTS IN THE MEDITERRANEAN**

**A WORKING DOCUMENT FOR THE MEDITERRANEAN POLLUTION
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Three Suggested Topics Of Study For Consideration With Groups Of Children That Could Lead To Worthwhile Research Findings And Arts Products

Other methods for health risks assessment in tourist establishments that are used include evaluations of the costs of not implementing appropriate, cost-effective control and prevention measures

6 DEVELOPING AND CO-ORDINATING THE NEXT STEPS TO HELP

REDUCE HEALTH RISKS ASSOCIATED WITH TOURIST ESTABLISHMENTS IN THE MEDITERRANEAN

1. INTRODUCTION

Tourism as an Ecosystem:

The requirements of tourism comprise an ecosystem with many '*inputs*' and '*processes*' that result in '*intermediates*' and '*by-products*' and a final '*end-product*' (Philipp and Hodgkinson, 1994). Such a system starts with the holiday maker arriving at an unfamiliar destination, often unaware of local hazards, customs or geography, and seeking opportunities for rest, recreation, enjoyment, adventure and cultural stimulation. The essential inputs will include food, shelter and security, as well as provision of a wide range of recreational and other support facilities and services. The '*process*' of obtaining rest, enjoyment and stimulation can involve the use of numerous facilities and engagement in many diverse activities. This entails exposure to many different hazards, each of which has its risks to health associated with exposure and use. The desired '*end product*' is a happy and satisfied tourist who has enjoyed the holiday, experienced no ill-health effects, and who wishes to return and repeat the experiences. It is therefore important to identify the hazards associated with all the different components of the built and natural environment and to quantify the health risks for different exposed groups such as tourists, workers in tourist establishments, and local residents. Their health, safety and personal security is fundamental to the enjoyment, well-being and benefit of tourists, the lifespan of tourism as a local industry, and to the economic, social, environmental and cultural well-being of the area (Philipp and Hodgkinson, 1994).

Responsibility for health and safety lies with the tour operators, the owners, providers and operators of the buildings, facilities and equipment used, and with individuals using these resources. Depending on national legislation of a particular country, there may also be statutory responsibilities which are enforced by external inspectorates. The health and safety requirements can be met in three main ways:

1. the government or local authority, who have responsibility for making and enforcing laws, regulations and standards;
2. private and voluntary groups in the community;
3. each individual who has a responsibility, not only for complying with the appropriate laws and standards, but also to act in a manner which will help protect the health of themselves and others (Philipp and Hodgkinson, 1994).

The Mediterranean Pollution Action Programme:

The Mediterranean Action Programme (MAP) gets different sectors of Mediterranean society involved in preserving the region's human and natural resources that have been eroded by rapid development. It strives to protect the environment and to foster sustainable development in the Mediterranean basin and was signed by 16 Mediterranean States and the European Commission, under the auspices of the United Nations Environment Programme (UNEP). It therefore has a central role in the control and prevention of health risks associated with tourist establishments in the Mediterranean.

The countries which have been considered in this report for the MAP are those who, together with the European Community, signed and adopted the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution and a number of related Protocols in 1976. They were:

Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Morocco, Serbia and Montenegro, Slovenia, Spain, Syria, Tunisia and Turkey.

The legal framework for the MAP comprises this Barcelona Convention adopted in 1976 and revised in 1995, and six protocols covering aspects specific of environmental protection. In June 1995, the Ninth Meeting of the Contracting Parties to the Barcelona Convention approved, and the Conference of Plenipotentiaries adopted Priority Fields of Activities for the then forthcoming decade (1996-2005). These areas included:

- The integration of environment and development through formulation of national strategies for sustainable development, development of appropriate instruments for its monitoring and assessment in the Mediterranean basin, and within this context the development of a regional framework and a programme for an environmental health action plan;
- The integrated management of natural resources including water management based as far as possible on hydrographic basins, water resources protection, anti-drought measures, water quality and quantity monitoring systems, appropriate treatment and reuse of waste water and saline water and the installation of infrastructures for the treatment of urban sewage of 100 Mediterranean coastal cities corresponding to a pollutant load of approximately 10 million people;
- The protection and preservation of vulnerable soil resources, promotion of the rehabilitation of degraded land and restoration of plant cover and the promotion of measures against erosion and desertification.

These areas are inter-related. An integrated approach to their management is essential for the health and human settlement needs of populations living in the Mediterranean

basin. Increasingly too, these peoples rely on tourism for their economic livelihoods, health and well-being. Accordingly, the following additional fields of activity are also incorporated into the work of MAP. Like the above areas, they too are aimed at contributing to the process of achieving sustainable development in the region:

- Combating land-based pollution;
- Preventing maritime accidents and illegal discharges from ships;
- Managing coastal areas;
- Preserving the Mediterranean marine and coastal biodiversity;
- Integrating the environment and development;
- Promoting information and communication technologies;
- Safeguarding cultural heritage.

This framework has been adopted by Mediterranean countries. Within it, National Environmental Health Action Plans (NEHAPs) have been developed as policy documents and basis for action, for implementation right across all government departments and major economic industries. **For example, the NEHAP for Malta has divided its plan into three Group actions:**

- Group 1: Those concerned with the basic requirements for environmental health, aimed at preventing or mitigating conditions whose environmental causes are well-established and can give rise to widespread and often acute health effects. These actions may yield immediate benefits that will be easily recognisable by the public;
- Group 2: Those concerned with the prevention and control of medium and long-term effects from both chronic and short-term exposures. The benefits for such action will only appear after many years although when the actions lead to rapid and marked reductions of levels of pollution, their value will be rapidly appreciated by the public;
- Group 3: Those concerned with the promotion of human well-being and mental health rather than the prevention of disease. Perception of the environment as unpleasant imposes stress on the affected population and since different factors may be perceived as unpleasant by different groups of people considerable expense could be entailed in attempting to satisfy everybody. Thus here more than with other groups of actions, priority setting is important and will involve consideration of public perception, public education and information if funds are to be invested appropriately (WHO, 1997).

The prevention and control of health problems in all these groups are important for the health and well-being of both host, tourist-receiving populations and the tourist visiting public. However, tourist visitors are particularly sensitive to issues surrounding environmental quality. Accordingly, as well as those in Groups 1 and 2, priorities associated with actions in Group 3 are equally important for the economic, environmental, cultural and social well-being of local communities and with this, for their health.

In considering ways forward for managing risks to tourist health in the Mediterranean basin other points also need to be considered. For example, different areas of the Mediterranean are principally Western or Eastern in their outlook, some areas are experiencing chronic and degenerative disease associated with industrialisation, others where the principal health problems are more of communicable diseases.

There are also cultural differences within the Mediterranean basin in the perception of and attitudes towards health and disease. These differences require Public Health professionals to apply general principles of risk management to the known facts about individual diseases and their occurrence in different localities, and to consider factors in the built and natural environment that apply to their local circumstances, local healthcare infrastructures, legislative frameworks and the availability and utilisation of health surveillance and environmental quality measures.

The perception of what constitutes a healthy and safe environment has been studied among health professionals belonging to the World Health Organisation's (WHO's) Rural and Urban Development and Housing Network (Philipp and Wood, 1992). Amongst 41 different neighbourhood factors, three were rated as being 'extremely good' for health (clean air, a well-maintained public sewage system, and a regular waste collection and disposal service). In addition, five cluster groupings of important factors were identified:

- Safety, including pedestrian precincts, footpaths that are well-lit at night, the structural maintenance of buildings, and lockable doors;
- Aesthetics, including the standards of interior decoration and the appearance of furnishings;
- Peace and quiet, including low noise levels, little road traffic, and sound-proofing;
- Convenience and comfort, including private gardens, indoor baths, and a hot water supply;
- Accommodation and household facilities including electric lighting, ventilation and insulation.

This work with the WHO Rural and Urban Development and Housing Network and reported in World Health Forum found that: '*new training materials were sought for help with public debate in planning and design of buildings, the provision of clean air, regular waste collection and disposal systems, frequent and safe transport, cycle paths, a well-maintained public sewage system, trees and parks, outdoor off-street play areas for children, the control of vermin, litter and noise levels, and for maintenance requirements to keep buildings in good repair*' (Philipp and Wood, 1992). The report also noted that: '*the need for these training materials is reinforced by concern expressed in 1990 by the World Tourism Organisation (WTO) that detailed technical standards for tourist accommodation are not always available or met*' (Handszuh, 1990).

This report for managing risks to tourist health in the Mediterranean is intended to:

1. provide a framework within the sustainable development concept for health professionals to use;
2. outline the main areas of present concern;
3. foster an ecological approach to the management of environmental health problems associated with tourism;
4. give a basis for discussion of priorities for health and well-being needing to be addressed;
5. suggest areas where local, action research is needed to help clarify needs and apply the principles of hazard recognition, risk assessment, environmental diseases prevention and control;

6. help improve networking throughout the Mediterranean region for improved standards of environmental control, health surveillance, and prevention of health problems associated with tourist establishments in coastal areas throughout the Mediterranean.

2. **THE NEED FOR A FRAMEWORK FOR SUSTAINABLE TOURISM**

The WHO European Region policy framework for **Health for All**, was updated in 2005. It reinforces the European Charter on Environment and Health (WHO, 1989) which stresses that *'good health and well-being require a clean and harmonious environment in which physical, psychological, social and aesthetic factors are all given their due importance'*. The Charter states that every individual is entitled to an environment conducive to the highest attainable level of health and well-being, but also points out that every individual has a responsibility to contribute to the protection of the environment, in the interests of his or her own health and the health of others (Philipp and Hodgkinson, 1994).

The World Tourism Organisation has further reinforced this background with its conceptual framework for 'Quality in Tourism'. It defines quality in tourism as:

'the result of a process which implies the satisfaction of all the legitimate produce and service needs, requirements and expectations of the consumer, at an acceptable price, in conformity with mutually accepted contractual conditions and the underlying quality determinants such as safety and security, hygiene, accessibility, transparency, authenticity and harmony of the tourism activity concerned with its human and natural environment' (WTO Quality Support Committee, 2003).

Environmental Resource Constraints on Tourism

With tourism expanding to new destinations throughout the world, the Mediterranean countries share a mutual concern to remain competitive by enhancing the image of their region as one with high environmental quality and a high quality of life (Blue Plan 2006a). Tourism and environmental issues are interdependent – the growth of air traffic for example boosts the economy but adds to pollution. Tourist development in some areas, where large tour operators have focussed on mass development at the expense of local features, is unsustainable (Blue Plan, 2006). When the tourist season is at its peak in the summer, natural water in the region is at its lowest ebb. The demand for water by increasing numbers of tourists is making a major contribution to the degradation and destruction of water ecosystems as rivers are being fragmented, groundwater levels are sinking and wetlands are drying out (WWF, 2004). To reduce water consumption and halt further encroachment of tourist development into the wetlands requires an integrated approach between governments, the tourist industry and individual tourists. Measures include installing water saving devices, reusing water, devising water saving policies and adopting a land use plan which respects environmental considerations. In turn, saving water will help hotels to keep costs down and preservation of the wetlands maintains a natural attraction for the area's visitors (WWF, 2004).

Policies for halting the degradation of the Mediterranean's coastal area will also enhance the well-being of tourists (Blue Plan, 2006), for example by halting

continuous linear urban development and introducing green areas, and favouring transverse access to the sea rather than coastal roads.

The Blue Plan is a non-profit organisation and research centre which leads the process of reflecting on the Mediterranean (www.planbleu.org/red/) Its overall objective for the area is conservation and sustainable management of natural and cultural heritage of an additional 4000 km of coastline by 2025, to preserve functional ecosystems and a quality environment for local populations and sustainable tourism.

There is as yet no protocol for sustainable management of the Mediterranean coastal areas. This will require the development of legislation, agencies or specific action mechanism, protected areas and integrated management plans, and the development of indicators for continuous monitoring of progress. Some Mediterranean countries do have framework legislation for protecting their coastal areas and three – France, Tunisia and Algeria – have a specialised agency to oversee this (Blue Plan, 2006).

‘Tourism policies need to evolve to limit the negative territorial and environmental impacts and to make tourism a real driver of sustainable urban, rural and coastal development. Tourists who enjoy the Mediterranean should contribute to its protection’ (Blue Plan, 2006).

Expanding Tourism

In 1998 it was predicted that 21st century tourism would be the antidote to ‘high-tech’ living (WTO at the European Conference on Tourist Medicine). Long haul destinations were expected to see the greatest growth, with Europe having slower growth, but remaining the leading region for tourism. In 2005 the tourist industry showed increased growth of 5.5% with a worldwide all time record of over 800 million tourist arrivals (UNWTO 2005). In Southern/Mediterranean Europe, there were 158 million tourist arrivals, representing 5.7% growth since 2004 (UNWTO, 2006). Growth is predicted to be sustained at around 4% worldwide in 2007.

There is also increasing diversification of the tourist industry and associated niche marketing. For example, at internal regional, national and international levels there is:

- cultural and special interests tourism, such as with heritage and arts trails, language learning, and arts programmes such as opera, open-air theatre, music and literary events;
- eco-tourism associated with conservation work and environmental awareness education;
- ethical and socially-responsible tourism associated with for example, heightened sensitivity for local values and sustainable development needs;
- business tourism with, for example, trades fairs and exhibitions and factory visits;
- sports tourism associated with followers of well-known teams and competitors, twinning of towns and ‘golden oldie’ competitions and events for veterans of some sports such as rugby, football and rowing;
- health-enhancing and well-being tourism associated with for example, spa resorts and retreats;
- health care tourism for persons seeking treatment, and as a new sub-group, ‘transplant tourism’ has also now been described (Spurgeon, 2006).

New environmental awareness programmes and holistic approaches in these areas is needed (Pasini, 1997).

As the second largest industry in the world, tourism has brought economic growth for many countries in the Mediterranean basin and it is a significant source of foreign currency for some of them (Blue Plan, 2006). It has been predicted that competition between destinations is likely to increase and be based on the criteria of **quality** and **sustainability** as it addresses the interests of travellers, tourism staff and local communities. **Tourist safety and security** is a basic condition for quality. **Threats** to these include: **social unrest, delinquency, terrorism, natural disasters and health hazards.**

Risks To Health From Increased Tourist Numbers

As trends in international travel have changed, with vastly increased air travel and visits to widely spread countries within short spaces of time, the risks to which travellers have been exposed have also evolved substantially (Martinez, 2002). Changes include the epidemiology of infectious diseases, and measures for avoiding them, as well as a range of environmental factors which affect health.

Tourism is very important to the economy of most Mediterranean countries, but its impact on the physical and social environment may also have consequences for the health and well-being of both the tourists and the local population. For many of the Mediterranean resorts, the tourist influx is seasonal but at peak times populations may more than double in size and services such as **sanitation** and **waste disposal** which are adequate for the local population must have the capacity to adapt.

The fluctuation in population also impacts on other local services such as transport, emergency fire and rescue services and the **provision of healthcare.**

Professional And Personal Responsibilities In Ensuring Healthy Tourist Establishments.

Intersectoral collaboration is essential for adequate control and prevention, the core components of which are controlling the hazards and preventing the risks to health by ensuring high standards of physical and environmental quality, social impact monitoring and preventive education and tourist behaviour.

Everyone involved with travel has a duty of care to help ensure the health and well-being of tourist visitors. This includes the travellers themselves, travel agents making their bookings, travel companies arranging and providing accommodation, operators of tourist attractions and activities for visitor populations, and commercial providers and organisations within tourist, host-receiving populations.

The responsibilities can be broadly divided into:

- physical factors of tourist establishments;
- physical factors in the general outdoor built environment;
- qualities and characteristics of the natural surrounding environment;
- attitudes, interests and behaviour of tourists, before travelling, during their visits, and on returning home;

- attitudes, values, and behaviour of local residents, home-based visitors, commercial and retail providers of tourist opportunities and resources, and the local public health infrastructure including health and safety control systems, healthcare facilities, security and prevention of crime, policing and legislation.

Healthcare

Resources which must cope with the fluctuation in demand include buildings, equipment and personnel to provide services of primary diagnosis and care, hospital and outpatient assistance and primary prevention. The latter includes surveillance and control of infectious diseases; Occupational Medicine for the protection of tourist industry workers; hygienic surveillance of food and drink; building hygiene; water supply; sewage disposal; bathing safety; collection and disposal of solid waste. Assistance for tourists may be needed in many different clinical specialties, including accident and emergency services and haemodialysis.

In addition to increasing their capacity, health services need to include additional services for tourists, such as vaccination, prophylactic medication and language charts. The provision of health and safety information for tourists on topics such as sun hazards, sexually transmitted diseases or prevention of infectious diseases is particularly important as a preventative measure. Pharmacists should also be educated in these respects as they are often the first source of health advice for holiday makers and may be poorly informed (Sorge et al, 2002).

Safety and accident prevention measures need to be in place to reduce as far as possible the potential for increased numbers of recreational or traffic accidents (q.v. Sections 3.1.4.1 and 3.4.4)

Additional issues for food safety include mass catering and the safety of bottled water. Tourists may have increased susceptibility to local pathogens (q.v. Section 3.2)

Environmental conditions such as clean air and safe drinking water apply equally to both local population and tourists, but the quality of bathing water and cleanliness of beaches is of particular importance for tourists (q.v. Section 3.1.3).

Aesthetic aspects of the environment also make an important contribution to tourist health and well-being, and thus to profitable and sustainable tourism.

A Co-Ordinated Approach Towards Healthy Tourist Establishments

Governments, local administrations, the private sector, community groups, tourists themselves and those working in the tourist sector all need to be involved in the co-ordinated management of healthy tourism to promote health and well-being of both tourist and the local population. This requires:

- the provision of adequate infrastructure/services;
- good and safe environmental conditions;
- protection of local values, including cultural and natural sites (WHO 1997).

Specific health issues from increasing tourism, which WHO, WTO, national governments and the tourist industry need to focus on include:

- early warning systems on disease outbreaks;

- implementation of international health regulations;
- health information for travellers and tourism organizers;
- training of staff in the tourism industry;
- quality standards for healthy tourism, promoting healthy lifestyle on vacation (op cit).

Sustainable tourism requires planned development which should include:

- control of bathing waters;
- drinking water supply;
- food safety;
- accident prevention;
- maintenance of greenery;
- reduction of noise pollution;
- the aesthetic quality of the built and natural environment (Pasini,1997).

Priorities needing to be addressed may however differ in different countries, areas, resorts and localities. Where or when there are many hazards to control but limited resources, priority ranking for the introduction of preventive measures can be based on five main questions (Philipp, 1993):

1. How serious is the problem in terms of the likelihood of death, disability, disease, discomfort or dissatisfaction?
2. How many people are likely to be affected during a year?
3. To what extent is an intervention technically feasible and likely to relieve or prevent the problem?
4. What does an analysis show for benefits obtained from the risk, adverse effects of the risk, and the cost implications for different systems of hazard control?
5. To what extent is the community likely to accept or adopt the intervention, behaviour or other change required?

A Health and Safety Checklist for Tourist Resort Owners, Managers and Persons With Operational Responsibilities

To help manage the hazards, a Health and Safety Checklist has been prepared (Philipp and Hodgkinson, 1994). In it, to help ensure appropriate measures for the control and prevention of the associated health risks, all persons with ownership, managerial or operational responsibilities should ensure that the following steps have been taken:

1. the principal hazards have been identified at each site in the resort and within each building in the resort;
2. those who could be affected by exposure to each hazard, to what extent, and for how long, have been identified;
3. the circumstances under which the exposure and health effects can occur with each hazard have been considered;
4. the health risks associated with each hazard have been studied and the costs and benefits of precautions considered for what is needed to protect the public, other visitors, the workers and any contractors;
5. appropriate measures have been taken to prevent or control any health risks;
6. reassurance can be given to tourist operators and visitors that the control measures are properly applied and used in all resorts and at each site within a

- resort, that equipment is kept in efficient working order and good repair, and that safe operational procedures are observed;
7. all exposed persons can be assured that appropriate environmental monitoring for the hazards and health surveillance for the risks are being continued, and that the findings are being made regularly available to those with ownership or operational responsibilities.

These seven steps should be based on legislation intended to encourage individual responsibility and personal accountability, but which also reinforces legally enforced standards and inspections by statutory agencies (Philipp, 1989). Their overall objective is personal safety.

Personal safety can be defined as: *'the degree to which temporary ill-health or injury, or chronic or permanent ill-health or death are controlled, avoided, prevented, made less frequent, or less probable, in a group of people'* (Philipp and Hodgkinson, 1994). For this purpose and when considering preventative measures, even quite simple questionnaire studies of the built environment can yield worthwhile information. For example, an open-ended question that asks for written comment on: *'Do your environmental conditions give you concern about any aspect of your health? If "yes", please give details of any symptoms and what you think caused them'*, can and has been used with good effect (Philipp, 1981).

Personal Responsibilities of Individual Tourists and Need for Vigilance by All Individual lifestyles, choices of activities to engage in during a holiday, and patterns of behaviour when abroad, all influence the likelihood of health risks for tourists. So they can make informed judgements about where to travel, when, with whom, how and for how long, tourists should before travelling and on arrival, think about and ask local people and their travel representative:

1. What are the local hazards?
2. Where are they found?
3. Which health risks are associated with them?
4. How best they can control or avoid these hazards?
5. What they should do if they experience a health problem associated with exposure to an environmental hazard? (Philipp and Hodgkinson, 1994).

Despite this framework, tour operators often report that individuals on holiday do not always consider their personal responsibilities for health and safety as a priority. Complaints they receive are usually based on personal expectations, tastes and requirements and how these have contrasted with their perceived quality of the facilities provided. They point out that the perceptions of the client and the tour operator may well differ for the accuracy and content of what is or should be in the holiday advertising brochure, and that a pre-booked holiday is one of the few instances of a business transaction where goods are purchased and paid for in full before they are seen. Accordingly, tour operators, owners of facilities, and the local authorities, need to ensure that in any resort or building used by the public, appropriate consideration has been given to hazard control and the prevention of health risks (Philipp and Hodgkinson, 1994). These terms have been defined as: 'hazard' = the potential of exposure to a substance or other matter to cause harm;

'risk' = the likelihood of exposure to a substance or other matter causing harm in the actual circumstances of use or other exposure (Philipp and Hodgkinson, 1994).

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3. ENVIRONMENTAL FACTORS ASSOCIATED WITH DIFFERENT TOURIST HEALTH PROBLEMS

Environmental Health is concerned with the assessment and control of those factors in the environment which may potentially harm human health. It includes not only the direct pathological effects of chemicals, radiation or biological agents but also the effects on health and wellbeing of aspects of the physical, psychological, social and aesthetic environments, including housing, land use, urban development and transport (The Implementation of the European Charter on Environment and Health, 1990).

These environmental factors associated with tourist health and well-being can be grouped into:

- (A) General Environmental Factors;
- (B) Food Safety and the Standards of Eating Establishments;
- (C) Hotel Safety Standards
- (D) Situational Factors Associated with Leisure, Transport & Other Activities;
- (E) Personal Safety and Security;
- (F) Communicable Diseases – particularly those air, water and food-borne
- (G) Travel Immunisation and Chemoprophylaxis

Principal health problems associated with these five groups of factors are considered below and separately under these headings:

3.1 GROUP A: GENERAL ENVIRONMENTAL FACTORS

3.1.1 AIR POLLUTION

3.1.1.1 OUTDOOR AIR POLLUTION

The WHO Collaborating Centre for Air Quality Management and Air Pollution Control reported recently that: *‘the impact of airborne particles on human health is currently seen as the most important environmental health issue in Europe ... recent assessments showed an expected loss in life expectancy of about 9 months in the year 2000 ... due to exposure to (ambient) PM_{2.5} mass’* (Kuhlbusch et al, 2006).

Ambient air pollutants may cause irritation, odour annoyance or acute or long-term toxic effects. The susceptibility of individuals to any pollutant will depend on their pre-existing status, with regard for example to age, sex, pregnancy, pulmonary disease, cardiovascular disease and genetic differences, as well as lifestyle factors such as exercise and nutrition (Air Quality Guidelines for Europe, 2nd Edition, 2000).

Chemicals are released into the air, in varying quantities, from both natural and man-made sources. Natural pollutants include emissions from land, water, and plants, radiological decomposition, forest fires and volcanoes or other geothermal sources. The concentration of these substances will vary according to local sources and weather conditions. Man-made pollutants have increased rapidly since the beginning of industrialisation and as the burning of fossil fuels, manufacturing processes and the use of chemicals has expanded, knowledge of their harmful effects on health and the environment has also grown. Outdoor pollution may originate from a single source or be caused by a mixture of substances from varying sources. Outdoor air pollutants may also be transported over medium and long distances.

Air pollution impacts on human health through inhalation, and also indirectly through the food chain or drinking water. Pollutants also affect quality of life through their direct, negative impact on ecosystems.

Despite major efforts in recent decades, air pollution in Europe is still considerable. While urban smogs have been eradicated in large cities such as London, the concentration of other pollutants in the atmosphere remains unchanged or even increased (WHO 1987).

Air Quality Control Measures

The 2nd edition of WHO's '*Air Quality Guidelines for Europe*' was published in 2000. The guideline values indicated are based on the lowest concentration of each pollutant at which adverse effects are observed. For substances with malodorous properties at concentration below which toxic effects occur, the guidelines set the value at a level to protect the public from odour nuisance. Otherwise, substances are categorised as either carcinogenic or non-carcinogenic.

In 2005 an update followed, based on new research findings and advances in the methodology of risk assessment, concerning the 4 common air pollutants: particulate matter, ozone, nitrogen dioxide and sulphur dioxide. (WHO, 2005).

The guidelines cover both indoor and outdoor pollution as it affects the general public. Unlike drinking -water, air is not a centrally supplied and controlled commodity and the analysis of air pollution problems is complex. The guidelines are based on characteristics applicable to all countries, such as the relationship between chemical exposure levels, doses and their effects. The guideline values, revised in a series of expert consultations, are intended to serve as a basis for the establishment of national standards and other control measures set by each country, which will reflect their level of development and national capability in air quality management, as well as local health risks, technical feasibility and economic considerations. For non-carcinogenic toxic substances the guidelines indicate levels combined with exposure time for which no adverse effects are expected. An estimate of lifetime cancer risk from exposure is given for those known to be carcinogenic. For some substances ecologically based guidelines for preventing negative effects on terrestrial vegetation are also given. The guidelines are intended to assist governments in risk management and the setting of standards, but are not intended to be regarded as standards in themselves (www.euro.who.int/air/activities/20050222_2)

3.1.1.2 INDOOR AIR POLLUTION

Health problems which can be caused by polluted indoor air range from temporary discomfort to serious illness, including asthma, allergies, cancer and lung disease (Anderson 2002). Common indoor air pollutants include:

- second hand smoke;
- biological pollutants including moulds, bacteria and dust mites;
- nitrogen dioxide;
- carbon monoxide;
- radon;
- volatile organic compounds such as paints, varnishes, pesticides and cleaning products;
- formaldehyde (contained in some forms of pressed and laminated wood products, as well as in tobacco smoke).

(www.ncsl.org/programs/environ/envhealth/iaqser.htm)

Sick Building Syndrome (SBS)

This term is used when occupants of a building experience acute health and discomfort effects linked to time spent in the building, but no specific illness or cause can be identified. Complaints may be localised in one room or area, or spread throughout the building. Symptoms include headache; eye, nose, or throat irritation; dry cough; dry or itchy skin; dizziness. The cause is unknown and symptoms are

usually relieved soon after the complainant leaves the building (www.epa.gov/iaq/pubs/sbs.html).

When symptoms of an identified illness are identified, and they can be attributed directly to airborne building contaminants, the term ‘building related illness’ (BRI) is used. Symptoms such as cough, chest tightness, fever, chills or muscle aches have clearly identifiable causes but may continue for a prolonged period after the complainant leaves the building.

WHO has estimated that SBS occurs in 30% of buildings such as offices, hotels, institutions or industrial premises.

Possible causes include:

- inadequate ventilation; chemical contaminants from indoor sources such as adhesives, carpeting, upholstery, manufactured wood products, copy machines, pesticides and cleaning agents which may emit volatile organic compounds (VOCs) including formaldehyde;
- tobacco smoke, which contributes high levels of VOCs;
- other toxic compounds and respirable particulate matter.

It is however possible that symptoms associated with a building may have other causes – for example an illness contracted outside the building, an allergy, job related stress or other psychosocial factors. Detailed epidemiological studies are often needed.

Toxic compounds and respirable particulate matter

Indoor pollutants include nitrogen dioxide, carbon monoxide, respirable particulates, formaldehyde and radon. High concentrations of some VOCs can cause chronic and acute health effects, and some are known carcinogens. Low to moderate levels of multiple VOCs may also produce acute reactions. Combustion products, such as carbon monoxide, nitrogen dioxide, as well as respirable particles, can come from unvented kerosene and gas space heaters, woodstoves, fireplaces and gas stoves (q.v.Section 3.3).

While SBS and BRI are associated with acute or immediate health problems; radon and asbestos cause long-term diseases which occur years after exposure. They are not considered to be causes of sick buildings but are nevertheless serious health risks which should be included in any comprehensive evaluation of a building's IAQ. See www.epa.gov/radon and www.epa.gov/asbestos

Chemical Contaminants From Outdoor Sources

These include, for example, pollutants from motor vehicle exhausts, plumbing vents or building exhausts (e.g. bathrooms and kitchens) which enter the building through poorly located air intake vents, windows or other openings.

Biological Contaminants

Bacteria, moulds, pollen and viruses may breed in stagnant water which has accumulated in ducts, humidifiers and drain pans, or where water has collected on ceiling tiles, carpets or insulation. Insect or bird droppings can also be a source of biological contaminants. Physical symptoms related to biological contamination

include cough, chest tightness, fever, chills, muscle aches and allergic responses such as mucous membrane irritation and upper respiratory congestion.

Poorly Maintained Air Conditioning Systems

Poor maintenance is associated with the growth of moulds, fungi and bacteria in the humidification chambers of air conditioning systems. Release of these agents, such as the *Legionella pneumophila* can produce aerosols which are then inhaled, causing diseases such as Legionnaire's Disease or Pontiac Fever in susceptible individuals. Risk factors for Legionnaires' disease include travelling abroad, a history of diabetes mellitus, current tobacco smoking, spending one or two night away from home without leaving the country, and being a driver by profession (Den Boer et al, 2006).

Elements may act in combination and may supplement other complaints such as inadequate temperature, humidity or lighting.

Solutions to Sick Building Syndrome

When pollutant sources are known and control is feasible: routine maintenance of HVAC systems, e.g., periodic cleaning or replacement of filters; replacement of water-stained ceiling tile and carpeting; institution of smoking restrictions; venting contaminant source emissions to the outdoors; storage and use of paints, adhesives, solvents, and pesticides in well ventilated areas, and use of these pollutant sources during periods of non-occupancy; and allowing time for building materials in new or remodelled areas to off-gas pollutants before occupancy.

Increasing ventilation rates and air distribution is often a cost effective means of reducing indoor pollutant levels. In many buildings, IAQ can be improved by operating the HVAC system to at least its design standard, and to ASHRAE Standard 62-1989 if possible. When there are strong pollutant sources, local exhaust ventilation may be appropriate to exhaust contaminated air directly from the building. Local exhaust ventilation is particularly recommended to remove pollutants that accumulate in specific areas such as rest rooms, copy rooms, and printing facilities. (For a more detailed discussion of ventilation, see [Indoor Air Facts No. 3R, Ventilation and Air Quality in Office Buildings.](#))

Air cleaning can be a useful adjunct to source control and ventilation but has certain limitations. Particle control devices such as the typical furnace filter are inexpensive but do not effectively capture small particles; high performance air filters capture the smaller, respirable particles but are relatively expensive to install and operate. Mechanical filters do not remove gaseous pollutants. Some specific gaseous pollutants may be removed by adsorbent beds, but these devices can be expensive and require frequent replacement of the adsorbent material. In sum, air cleaners can be useful, but have limited application.

Education and communication to ensure that building occupants, management and maintenance personnel fully communicate and understand the causes and consequences of IAQ problems, and work effectively together to prevent or remedy them.

Environmental Tobacco Smoke

Tobacco smoke is the most significant indoor pollutant and recent evidence of the harmful effect of 'passive' smoking has led to smoking bans in public buildings in many western countries. In addition, some countries such as France which did so on 1 February 2007, have introduced a ban on smoking in public places such as bus and train stations, schools and offices; in France bars, cafes, restaurants, clubs and hotels have until 1 January 2008, to comply with this legislation (Editorial, 2006a). In contrast, in the Eastern Mediterranean where "public pressure for these services is low ...only minimal legislation is in place to protect workers from carcinogens and promote tobacco control" (Rawaf et al, 2006).

The WHO Air Quality Guidelines (2000) state:

'Environmental Tobacco Smoke (ETS) has been found to be carcinogenic in humans and to produce a substantial amount of morbidity and mortality from other serious health effects at levels of 1-10 $\mu\text{g}/\text{m}^3$ nicotine (taken as an indicator of ETS). Acute and chronic respiratory health effects on children have been demonstrated in homes with smokers (nicotine 1-10 $\mu\text{g}/\text{m}^3$) and even in homes with occasional smoking (0.1-1 $\mu\text{g}/\text{m}^3$). There is no evidence for a safe exposure level. The unit risk of cancer associated with lifetime ETS exposure in a home where one person smokes is approximately 1x10⁻³.'

A Framework Convention on Tobacco Control (FCTC) was adopted at the 56th World Health Assembly in 2003. All the Mediterranean countries, with the exception of Bosnia and Herzegovina and Monaco were signatories to the framework but to date the convention has not been ratified by Croatia, Italy, Morocco and Tunisia (www.euro.who.int/tobaccomfree).

Article 8 of the FCTC – protection from exposure to tobacco smoke, states:

'each party shall adopt and implement in areas of existing national jurisdiction as determined by national law and actively promote at other jurisdictional levels the adoption and implementation of effective legislation, executive, administrative and/or other measures, providing for protection from exposure to tobacco smoke in indoor workplaces, public transport, indoor public places, and, as appropriate, other public places.' (www.who.int/tobacco/fctc/text/en/fctc_en.pdf)

The health risks are relevant for workers in tourist establishments. For example, although data for Mediterranean countries are not readily available, a recent postal survey of 1568 casino workers in London, UK, yielded a 36% response rate of whom 22% were current smokers. Among the respondents, 71% reported being nearly always exposed to heavy levels of second hand smoke (SHS), and most (65%) want all working areas in their casinos to be smoke free; the majority (78% were bothered by SHS at work, 91% have wanted to move away from where they are working because of it, and 57% believed their health had suffered as a result of SHS (Pilkington et al, 2006). Banning smoking in the workplace is particularly good for the health of bar workers as they breathe in up to six times more second-hand smoke than other working men and women (Editorial, 2006b). A study in Scotland has identified that in the first two months following their workplaces becoming smoke free, bar staff inhaled significantly less smoke (as measured by serum concentrations

of cotinine), had significantly better lung function, and had significantly fewer respiratory and other symptoms than they had immediately before the ban. Asthmatic bar workers benefited most. Their lung function improved more than that of healthy bar workers, and they reported a better asthma related quality of life. White cell counts as a measure of airways inflammation also reduced significantly in this subgroup (Editorial, 2006b).

Air Quality Issues For Tourists.

Tourism has added to air pollution in tourist establishments with air and bus travel and additional commercial traffic. It is important for tourist well-being however that those responsible for the planning of new resorts, and for environmental management, consider the interdependence of these physical pollutant factors. Tourist accommodation should be sited well away from industrial output units, refuse disposal points, public incinerators and warehouses, from the point of view of aesthetics as well as air pollution.

Carbon Monoxide Poisoning

There have been several recent tragedies concerning carbon monoxide in tourist hotels (www.infoplease.com/ce6/sci/A0835810.html) the most recent involving the death of two small children who died from carbon monoxide poisoning whilst sleeping in their holiday chalet in Greece. A faulty boiler was suspected to be the cause but the air conditioning and water heater systems were also being investigated (Wall, 2006). This draws attention to the need for strictly applied Health and Safety regulations for the installation and maintenance of gas fires, stoves, boilers and paraffin heaters. Warning signs of potential carbon monoxide poisoning include:

- the flames of gas appliances burning orange or yellow instead of blue;
- coal or wood fires that are difficult to light, burn slowly or go out;
- poorly ventilated rooms, especially if double glazing has been installed;
- Appliances that do not have a flue or chimney taking the gases away, out of the room;
- blocked or cracked chimneys, such as from nesting birds or plants growing in the walls;
- symptoms such as tiredness, headaches, dizziness and chest pains (EDF Energy, 2006), (Philipp and Hodgkinson, 1994).

Control Measures

The Air Quality Guidelines for Europe cover both indoor and outdoor air quality (q.v. Section 3.1.1.1)

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3.1.2 DRINKING WATER AND SANITATION

Water is a scarce resource in much of the Mediterranean region, particularly in the southern and eastern countries where renewable natural resources are limited and have in some cases been exploited to their maximum capacity (Blue Plan, 2006).

Agriculture is the main user of water and irrigated land is expected to increase by 38% in the South and 58% in the East by 2030, though agricultural demand in the northern countries would remain stable or possibly decline.

The demand for drinking water is also expected to continue to meet the needs of a growing urban population and the expanding tourism industry which doubles the population of many towns in the hottest season.

Environmental water demand, essential to maintain ecosystems, is difficult to quantify but some countries have endeavoured to include these needs in their legislation.

According to the Blue Plan's projections, demand will increase by a further 43km³ by 2025, mainly in Turkey and Syria. With the added uncertainty of climate change, the need to adapt water management policies, and make optimal and effective use of resources, has been highlighted (Blue Plan, 2006). It has been estimated that water saving devices can save up to 50% of water (EEA 2001 – European Environment Agency. Environmental signals.)

A supply-based approach to the growing demand for water has led to over exploitation of underground renewable and non-renewable resources, the development of interregional or international transfers, with the associated risk of

conflict over management, and new methods of supplementing supplies such as reuse of treated wastewater for irrigation and desalination of sea water. Poorer countries may lack the capacity to exploit the water resources they have. Water is a key area of environmental development for a sustainable future (Blue Plan, 2006).

3.1.2.1 WATER QUALITY

Many aquifers, particularly in the North, have an excessively high pesticide or nitrate content. Sanitation systems in the South and Eastern countries may be poor and many rivers are chronically polluted with non-treated domestic and industrial discharges (Blue Plan, 2006).

Drinking water may potentially be contaminated by chemical or biological contaminants. Whereas the former are less likely to affect tourists than the local population, since harmful effects tend to be cumulative, tourists are more likely to suffer acute effects from pathogenic microorganisms, to which the local population may have acquired immunity.

The most common health risk from contaminated drinking water is travellers' diarrhoea (q.v. Section 3.6.1).

Precautions for the individual:

- tourists should avoid drinking un-bottled water;
- avoid uncooked food such as salads;
- avoid ice unless known to be made from safe water;
- avoid cleaning teeth in unsafe water.

3.1.2.2 SEWERAGE AND WASTEWATER TREATMENT

The southern Mediterranean countries need help with such things as waste management and water treatment etc. (Blue Plan 2006). The Protocol on Water and Health (2005) covers both drinking water and wastewater treatment in a holistic approach. In order to protect both human health and water resources, the parties to the Protocol include in their monitoring system the methodology for assessing the quality of service of sanitation networks and the performance of wastewater treatment plants developed by the Mediterranean Action Plan (*Protocol on Water and Health, 2005*).

Control of water related diseases

The Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes is the first major international legal approach for the prevention, control and reduction of water-related diseases in Europe (www.euro.who.int/watsan/waterprotocol/20030523).

The Protocol was adopted in 1999 at the Third Ministerial Conference on Environment and Health and entered into force in August 2005, becoming legally binding for the ratifying countries. So far, it has been signed by 36 countries and ratified by 20.

Signatories agreed to establish and maintain comprehensive national and/or local surveillance and early warning systems to prevent and respond to water-related diseases. They also agreed to promote international cooperation to establish joint or

coordinated systems for surveillance and early warning systems, contingency plans, and responses to outbreaks and incidents of water-related diseases and significant threats of such outbreaks.

WHO/Europe and the United Nations Economic Commission for Europe (UNECE) provide the joint secretariat for the Protocol, coordinating activities for its implementation. WHO handles the health aspects, while UNECE takes care of the legal and procedural aspects.

By adopting the Protocol, the signatory countries agreed to take all appropriate measures to achieve:

- adequate supplies of wholesome drinking-water;
- adequate sanitation of a standard that sufficiently protects human health and the environment;
- effective protection of water resources used as sources of drinking-water, and their related water ecosystems, from pollution from other causes;
- adequate safeguards for human health against water-related diseases; and
- effective systems for monitoring and responding to outbreaks or incidents of water-related diseases.

The Protocol is developing surveillance methods for the emergence of water-related health threats including diseases of microbiological origins such as cryptosporidiosis and giardiasis (q.v. Section 3.6.8), severe and acute diarrhoea of undetermined origin, jaundice and dehydration.

Severe water shortages in the Eastern Mediterranean Region have made the reuse of wastewater essential in agriculture, but if this is not controlled, there is a risk of a significant negative impact on human health.

Water Quality Guidelines

Guidelines for drinking water, 3rd edition 2004. Volume I: Recommendations is the current version of the WHO water-quality guidelines first published in 1984/5, succeeding the earlier 'International Standards for drinking-water. Their primary aim is to protect public health by providing an assessment of the health risk presented by microorganisms and chemicals present in drinking water. Guide values are recommended for specified contaminants, using a consistent process of assessment. The guideline values are not mandatory, but rather intended to inform the development of risk management strategies incorporating local, national and regional standards.

Guidelines for the Safe Use of Wastewater, Excreta and Greywater, 3rd edition, WHO 2006. These guidelines are particularly significant for countries in the EMR who are urged to review their existing regulatory and management frameworks in this area to ensure that wastewater is used in agriculture to alleviate water shortages, but without risk to human health. A new initiative is to be launched to assist countries in the application of the Guidelines (www.emro.who.int/ceha/newsdetails.asp?id=140). A recent workshop in Jordan reviewed the outcomes of a project on Wastewater Management and Reuse which was implemented in 11 countries including coastal Egypt, Morocco, Tunisia and Jordan. Outcomes included development of monitoring

and surveillance systems and good practice tools (www.emro.who.int/ceha/newsdetails.asp?id=140).

Bottled waters

The Codex Alimentarius Commission (CAC) has developed a worldwide *Standard for Natural Mineral Waters* (1997) which provides a definition, establishes limits for certain chemical substances and microorganisms and specifies permitted treatment and handling procedures (www.emro.who.int/ceha/newsdetails.asp?id=140)

3.1.3 BATHING BEACH QUALITY

A beach is defined as ‘*a part of the coastline where bathing actually takes place or may be encouraged in the future*’. Assessment and monitoring for health purposes has focussed to a large extent on **aesthetic aspects**.

3.1.3.1 AESTHETIC ASPECTS

The aesthetic quality of the environment is one of the five areas identified by the World Health Organisation (WHO) for consideration in environmental management (Williams, Pond and Philipp, 2000). The WHO European Charter on Environment and Health states that ‘good health and well-being require a clean and harmonious environment in which physical, psychological, social and aesthetic factors are all given their due importance’ (WHO, 1989a).

Tourism influences health and should be psychologically beneficial, therefore pollution problems cause nuisances for tourists as well as for the environment (WHO, 1980).

Cleanliness of a beach is one of the most important characteristics of a waterside resort sought by visitors (Oldridge, 1992; Morgan et al, 1993). Research has shown that the general public usually infer that a highly littered beach also has poor water quality (Williams, Pond & Philipp, 2000). The considerable cost of cleaning the coastline must be set against the impact of negative aesthetic issues on amenity value, for example loss of tourist days; resultant damage to leisure/tourism infrastructure; damage to commercial activities dependent on tourism; damage to fishery activities and fisher-dependent activities; damage to local and international image of a resort.

Certain aspects of aesthetic pollution have a greater impact on the public than others and it has been suggested that a weighting of importance should be placed on the determinands so that an overall aesthetic index could be established (NRA 1996). For example, the presence of sewage-related debris (SRD) and medical items tend to be perceived as more unpleasant than items such as cans or plastic bottles.

Aesthetic issues are important for local sustainable development, as quality of coastal recreational waters is an essential element in their marketing strategy (Health Risks from Marine Pollution in the Mediterranean. Part I). A permanent solution requires prevention of pollution at source, but there is also a need for programmes which keep beach and recreational water areas clean, promote public education and impose sanctions.

3.1.3.2 HEALTH HAZARDS

Litter

There is a potential risk of contamination by vectors of infectious diseases such as Hepatitis B and HIV associated with discarded syringes and other medical waste (Walker, 1991). Discarded food, dead animals, oil and containers have been associated with microbiological hazards and visible litter has also been found to correlate with high counts of *Escherichia. coli*, commonly associated with human faecal material (Philipp, 1991).

Although the risk of infection by serious disease is small, visually unpleasant pollutants potentially have a negative impact on tourism.

Eutrophication And Algal Blooms

Most of the countries bordering the Mediterranean have experienced damage to the aesthetic quality of tourist beaches from eutrophication, including discolouration of water and malodour. In 1989, large tracts of mucilage on the shoreline, caused by the decay of algae, made many Italian beaches temporarily unsuitable for bathing and as a consequence a 40% reduction in local tourism was experienced. Economic loss was identified in terms of tourist days lost, reduced use of hotels, restaurants and other amenities, damage to tourist-dependent activities such as food industry, damage to fishing activities and to the image of the area as a tourist resort (MED/POL, 1995).

In 1993 Turkey suffered red algal tides as a result of which pollution-related illness caused an estimated 10,000 lost working days amongst local swimmers and fishermen (Pearce, 1995).

Marine Debris

Injuries which may be caused on the beach by marine debris include cuts caused by broken glass and discarded ring tabs from cans; skin punctures from abandoned syringes; exposure to chemicals from leaking containers washed ashore (Dixon & Dixon, 1981). Holiday makers have occasionally been injured by picking up munitions and pyrotechnics such as smoke and flame markers on a beach (Dixon 1992)

Sand Quality

The quality of beach sand has only recently been recognized as a factor in the transmission of a number of skin and other contact infections, (Health Risks from Marine Poll...Pt 1 1995).

3.1.3.3 RECOMMENDED MONITORING and ACTION

Litter Surveys

These assess types, amounts, distribution and source of litter in order to assess the effectiveness of remedial measures.

Beach quality monitoring programmes will produce inconsistent results unless monitoring parameters, sampling stations and sites and sampling frequencies are standardised. WHO has provided specific guidance (WHO, 2003).

Mechanical Beach Cleaning

This is costly and may interfere with beach ecology. It usually involves a sieving process which is not suitable for pebble beaches. On the positive side it is quick and

can cover large areas. Many popular tourist beaches in the Mediterranean are cleaned daily with the cost met directly or indirectly by beach users.

Manual Beach Cleaning

These programmes are inevitably smaller scale but can help to raise community awareness and enable the sourcing of the litter.

The Blue Flag Award

The Blue Flag scheme is organised by the Federation of Environmental Education (FEE), formerly the Federation of Environmental Education in Europe. It was developed originally to promote quality in EU bathing waters but has now, with the cooperation of UNEP and WTO, been extended to other countries worldwide. Beach criteria must be similar within a region, but will vary between regions, according to specific regional environmental conditions (www.blueflag.org). The award is based on compliance with 29 criteria covering three areas:

- Environmental Education and Information;
- Water Quality;
- Environmental Management;
- Safety and Services.

It is awarded for one season only. Mediterranean countries currently participating in the Blue Flag Award scheme include: Croatia, Cyprus, France, Greece, Italy, Montenegro, Morocco, Slovenia, Spain and Turkey.

3.1.3.4 CURRENT GUIDELINES

In 1990 WHO recommended that aesthetic standards and indicators for the quality of bathing water and bathing beaches could be usefully developed and agreed by WHO Member States (WHO 1990).

Guidelines for Safe Recreational Water Environments. Volume 1: Coastal and Fresh Waters 2003 provides a referenced review and assessment of the wide range of health hazards encountered during recreational use of coastal and freshwater environments. It includes guideline values or conditions and their derivation and describes prevention and management options for responding to identified hazards. Beach quality is covered in Chapters 6 and 9.

In *Monitoring Bathing Waters. A practical guide to design and implementation of assessment and monitoring programmes*. Bertram & Rees (Eds) WHO, 2000, Chapter 12 offers 'Elements of Good Practice' concerning the monitoring of litter since this may be highly site specific and there are few standards regarding beach cleanliness.

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3.1.4 RECREATIONAL WATER

The WHO, Regional Office for Europe, Coordinating Unit for the Mediterranean Pollution Action Plan, (MAP) has summarised and described the history and development of coastal recreational water quality standards in the Mediterranean. This work had a principal role in and provided much of the evidence base for the evolution of the WHO guidelines, the WHO/UNEP interim criteria for bathing waters, and the EU Directives for bathing water quality (Kamizoulis and Saliba, 2004).

Sustainable management of bathing beaches requires an understanding of the relative importance for health of each of the variety of hazards which exist in a recreational water environment, and the costs and resources involved in controlling them. In addition to the hazards on the beach itself, as detailed above, water related hazards include:

- accidents (drowning and injury);
- physical hazards (exposure to heat and cold);
- microbiological infections/hazards;
- toxic algal products and occasional chemical pollution resulting in poisoning and toxicoses; (Pond, 2000).

3.1.4.1 ACCIDENTS

Although more people these days are able to swim, drowning still accounts for an estimated half a million deaths per annum worldwide. Accidents resulting from activities such as scuba and deep sea diving, sailing and boating and other water sports cause increasing numbers of deaths and injuries.

Particular risks of drowning in recreational waters are caused by tides and currents, falls from boats, being caught in submerged obstacles or falling asleep on inflatable mattresses which can be swept out to sea.

Near-drowning is also a serious problem which can have a life-long effect on health. One study found that for every 10 children who die from drowning, 140 require emergency treatment and 36 are hospitalised for ongoing treatment (Wintemeute et al, 1988). Some survivors of drowning suffer subsequent anoxic encephalopathy leading to long term neurological deficits (Quan et al, 1989).

Wading or fishing carries a risk of drowning as swimming ability is hampered in falls in cold water by a fully clothed person.

Impact injuries, particularly head and spinal injuries, are also associated with recreational water activities and are often the result of diving accidents, particularly diving into water which is too shallow, or hitting an underwater obstruction.

Jumping into water, or jumping on other people in the water may cause a detached retina, which can result in full or partial blindness.

Contributory Factors:

- alcohol consumption;
- currents and winds;
- underwater entanglement;
- bottom surface gradient and stability;
- waves, water transparency and impeded visibility;
- poor or inadequate equipment (e.g. boats, lifejackets);
- overloading of boats;
- lack of parental supervision of children;
- pre-existing disease, such as a seizure disorder. (WHO, 2003, Ch2)

Preventive Measures

It has been estimated that 80% of drownings are preventable, but surprisingly being able to swim and water safety instruction have not been shown to be effective preventive measures.(WHO, 2003, Ch.2). Effective interventions include:

- public education concerning hazards and safe behaviour;
- regulations to discourage unsafe behaviour;
- continual adult supervision of children;
- restriction of alcohol provision;
- provision of properly trained life guards;
- provision of rescue services;
- availability of resuscitation skills/facilities;
- co-ordination with user groups concerning hazard awareness and safe behaviour;
- wearing of adequate lifejackets when boating (WHO, 2003, Ch2).

Physical hazards of water sports

Diving

The proportion of spinal injuries resulting from diving has been variously estimated at 3.8 – 14% (Minaire et al 1979), 10% (Think First Foundation, 2002) and 21% (Blanksby et al 1997). Injuries to the cervical vertebrae may occur when people dive into water which is too shallow, or where rocks are hidden below the surface. Diving from trees, balconies or structures, and poor underwater visibility are contributory factors.

Preventive measures for spinal cord injury include education and awareness raising, in addition to signs and regulations.

Scuba diving

Scuba diving is potentially dangerous and requires adequate training and appreciation of the risks involved and methods of avoidance (Dawood, 2002). Some countries require a medical certificate. Absolute contraindications to diving, which means a person should never dive, are epilepsy, lung conditions such as emphysema and heart problems that could lead to fainting under water. Relative contraindications include asthma, diabetes, obesity and recovery from heart attacks or operations. In these cases a medical is required from a physician specializing in diving.

Health risks include:

- effects of pressure, which increases with depth and without equalisation of inside/outside body pressure may cause tissue damage and pain in air filled cavities such as lungs, middle ear and sinuses;
- decompression sickness (DCS), or the ‘bends’ caused by bubbles of nitrogen, dissolved in the body tissues under pressure during the dive, being released if the pressure is released too quickly; the worst cases may result in death; divers should not travel by air until 24 hours after a dive;
- infection of the outer ear (op.cit).

Water skiing

There are few risks to water skiing per se, if a life preserver is worn in case of being stunned while falling in to the water. Women are advised to wear an adequate swimsuit for protection against a high-speed douche. A wetsuit protects against high speed falls in the water.

Sailing and wind surfing

These sports are not dangerous if sensible precautions are taken:

- novices should sail upwind rather than downwind and along the coast rather than out to sea, to avoid the dangers of wind strength increasing;
- wear appropriate protective clothing to retain body heat without overheating;
- a life preserver or buoyancy device is always advisable (Dawood, 2002).

The Hazards Of Beach And Water Sports Equipment

Safety training for operators is essential. For many activities and sites, the operators are licensed and can deny access to potential but unsuitable users such as intoxicated persons. It is worth remembering that the more complex the construction or use, the greater the risk. Beach equipment hired out to holiday-makers and with different inherent hazards may include deck chairs, sun loungers, windbreaks, mats, surfboards,

canoes, windsurfers, dinghies, row, motor and sail boats, water skis, jet skis, inflatable rafts, pedal boats and diving equipment (Philipp and Hodkinson, 1994).

Other Physical Hazards

Other physical hazards of recreational water include exposure to excessive cold and heat. Cold water removes heat from the body 25 times faster than cold air (WHO, 2003, Ch. 3). The immediate effects of immersion in cold water (<15°C) such as can occur during colder Winter months can include life-threatening respiratory and cardiovascular effects which may lead to drowning. If the sudden immersion does not cause death immediately, the initial effects will lessen and progressive whole body cooling occurs, leading to hypothermia. Locomotion and swimming performance will be impaired, impeding the victim's efforts to rescue himself (Tipton et al, 1999). A person who has consumed alcohol will succumb more rapidly to hypothermia (Haight & Keatinge, 1973).

Preventive measures include wearing a lifejacket or personal flotation device which keeps the airways free of water, wearing a wet suit or survival jacket if swimming in cold water, and taking precautions against immersion, such as a safety line.

The effects of exposure to sun and excessive heat (**cross ref sun section**) can be minimised in recreational water environments by the wearing of suitable lightweight clothing and wide brimmed hats, seeking shade, swimming in cool water and drinking plenty of fluids.

Microbiological Hazards

The majority of human diseases associated with recreational contact with microbiologically polluted waters are produced by pathogenic microorganisms including bacteria, viruses and protozoa which are discharged into the aquatic environment through faecal contamination from infected persons or animals (Borrego & Figueras, 2000).

Wastewater treatment processes significantly reduce the incidence of illness among the human population, especially in the case of bacterial disease, but protozoa cysts and many human pathogenic viruses are very resistant to the chemical and physical treatment processes (Aulicino et al 1996). Infection may also be passed directly from other recreational water users.

Some agents of waterborne diseases, such as *Legionella* spp., *Vibrio* spp., *Aeromonas hydrophila* and *Pseudomonas aeruginosa* are indigenous to aquatic environments.

The main diseases associated with waterborne infections include gastroenteritis, hepatitis, skin lesions, wound infections, conjunctivitis, otitis, respiratory infections and generalized infections (Borrego and Figueras, 2000). Typhoid fever and cholera, the most important of the waterborne infections transmitted by ingestion of polluted water, are also possible.

Also important are water-washed infections, associated with the recreational use of natural water and generally due to poor hygiene. These are acquired by contact with contaminated water or bathing in close proximity to an infected person and include

those affecting the eye, mucous, ear or skin, such as trachoma, conjunctivitis, scabies and otitis. In developed countries they are associated with recreational exposure to contaminated marine waters, freshwater lakes, ponds, creeks and rivers and also with inadequately treated water in swimming pools, hot tubs, and whirlpools (Borrego and Figueras, 2000)

The most important of the water-related infections transmitted by vector are caused by the inhalation of water aerosols, for example *Legionella pneumophila* and non-tuberculous mycobacteria (Wendt et al 1980; Winn, 1995) or consumption of raw or undercooked contaminated shellfish (q.v. Section 3.6.1)

Algae and Cyanobacteria

Algal blooms, both toxic and non-toxic, have occurred in the sea throughout recorded history but have been increasing in recent decades, associated with the growing anthropization of coastal areas, and nutrient enrichment of coastal waters.

Health hazards include marine cyanobacterial dermatitis (swimmers' itch or 'seaweed dermatitis') which may occur after swimming in seas containing the blooms of certain species of marine cyanobacteria (WHO, 2003). Symptoms are itching and burning within a few minutes of contact, then visible dermatitis and redness 3-8 hours later followed by blisters and deep desquamation (op.cit)

Toxic components

Two toxic components – **debromoaplysiatoxin and lyngbyatoxin A** have been isolated from marine cyanobacteria, which are both highly inflammatory and known to be potent tumour producing compounds (Gorham & Carmichael, 1988; Fujiki et al, 1990). More research is needed to establish the possible tumour promotion risks for human populations.

Several marine dinoflagellates and flagellates have been associated with the death of fish and/or death of invertebrates. No human intoxications have been registered in connection with the blooms of these ichthyotoxin producing species, but more information is needed on the effect of the toxins on humans after dermal contact OR ingestion of seafood contaminated with ichthyotoxins. Nevertheless, fish kills are often used as an index of potential human health risks needing further investigation.

Fragments of marine dinoflagellate cells and/or toxins (e.g. brevetoxins) may be harmful to humans if inhaled from sea spray (Baden et al 1984; Scoging, 1991).

Several non-toxic plankton organisms often occur in blooms when significant inputs of nutrients and intensive sunlight are experienced. The resulting 'red tides' have no direct human health impacts but cause aesthetic problems such as discoloured water, reduced transparency, scum formation and bad odours (q.v. Section 3.1.3).

Seafood Contamination

Enteric organisms from faecally contaminated water collect in the tissue of bivalve molluscan shellfish and numerous outbreaks have been attributed to their consumption, for example hepatitis A and E viruses, Norwalk-related viruses, pathogenic *E. coli*, *Salmonella typhi* and species of *Vibrio*, *Shigella*, *Plesiomonas* and *Aeromonas* (Desenclos et al 1991; Hackney & Potter, 1994a & b; Jaykus et al 1994).

Total consumption of shellfish in Mediterranean countries has been estimated at over 12,000 metric tons annually, most consumed in coastal areas. (MED/POL, 1995).

Both water and seafood quality control measures vary from country to country (MED/POL, 1995). Quality criteria and standards are usually based on ‘acceptable’ concentrations of bacterial indicator organisms. Although these provide a reasonable estimate of the degree of sewage pollution, and do correlate with concentrations of bacterial gastrointestinal pathogens, they don’t have a clear correlation with presence and density of either viruses or non-gastrointestinal pathogens, including fungal ones. (MED/POL, 1995).

Toxic algae

Naturally occurring toxins produced by unicellular algae accumulate in shellfish which when consumed may cause toxic episodes such as amnesic shellfish poison (ASP), diarrhoeic shellfish poison (DSP), neurotoxic shellfish poison (NSP), and paralytic shellfish poisoning (PSP) (Car & Jasprica, 2004). Diagnosis and treatment are complicated by the symptoms being similar to those caused by pathogenic bacteria such as salmonella, shigella or vibrios. Toxic episodes can cause serious health problems and also result in enormous loss of revenue for shellfish producers.

The problem of algal biotoxins in shellfish is a relatively recent one in the Mediterranean. Warmer seas are associated with the risks of toxic and non-toxic algae growth and blooms and more information is required on the resultant health effects, particularly in areas known to be subject to regular or sporadic ‘algal bloom’ (eutrophication) phenomena (MED/POL, 1995). In a number of Mediterranean countries, whole consignments of mussels regularly have to be destroyed because of contamination with algal biotoxins, yet it is difficult, if not impossible, to include routine analysis of shellfish that ensures safety from microorganisms such as vibrios, viruses and microtoxins (op cit).

Chemical Hazards

Possible risks in marine waters, both for recreational use or shellfood growing, are from trace metals, radionuclides, pesticides, agricultural waste, oils, detergents and illicit dumping of toxic waste (MED/POL, 1995). In recreational waters there is usually significant dilution of contaminants so the risk is smaller than for microbiological contaminants. More information is needed on long term health effects such as cancers and damage to immune system in marine animals. Levels of contamination in seafood are of concern. Many shellfish can concentrate levels several thousand-fold in their flesh; examples are accumulation of mercury in tuna fish and shellfish, cadmium in mussels, arsenic, organotin compounds from paints used on yacht hulls, organohalogen compounds (particularly PCB’s). Some pesticides and polycyclic aromatic hydrocarbons (PAHs) can cause sufficiently high levels to interfere with commercial harvesting and sales.

WHO has given guidance on human exposure assessment, guideline values for appropriate exposure limits, and an approach to assessing chemical hazards in recreational waters.

Other Hazards

A number of other diverse biological, chemical or physical hazards which could be encountered include venomous aquatic organisms such as sharks or jellyfish, the bacterium *leptospira* (q.v. Section 3.6.3) which causes Weil's disease or haemorrhagic jaundice, and the presence in the vicinity of industrial effluent disposal facilities. These are localised hazards which it is recommended are included in monitoring programmes only where they are known or suspected to be locally important (Pond et al, 2000).

Extent Of The Problem

European tourist authorities have estimated that some 40% of tourists on vacation at Mediterranean coastal resorts became ill at some time during or immediately after their visit, one third reporting having been bed-ridden, one fifth cutting short holidays. However the source of infection (marine or otherwise) is not certain and could also be attributable to unsanitary food consumption or unsafe drinking water.

One study attributed 19% of Hep A cases in Frankfurt to consumption of contaminated mussels and oysters in the Mediterranean by German tourists (MED/POL 1995). Other studies have suggested that significant proportions of infections such as giardiasis, Hep A, shigellosis and amoebic dysentery in Europe were contracted in the Mediterranean countries.

3.1.4.2 MONITORING PROGRAMMES

The WHO Guidelines give recommendations for sampling regimes, methods, organisms, chemicals, heavy metals and physical substances. Public Health Managers need to ensure the adequacy of local arrangements to ensure WHO exposure guidelines are not exceeded.

Documentation of disease associated with recreational use of water is hampered by the intermittent nature of infections, variation in age and health of infected persons, and in the physiological status and virulence of the pathogen, as well as its concentration in the water. Similar symptoms may be caused by pathogenic microorganisms from sources other than water, or by factors unrelated to microbial infections. In most investigations of waterborne disease outbreaks, it is the epidemiological evidence that identifies water as the vehicle of transmission, rather than detection of the infectious agent in water samples, which is affected by the size and timing of the contamination event, the time lag before recognition of the outbreak, the survival characteristics and transport patterns of the agent and the sensitivity and efficiency of laboratory methods (Rose, 1990; Cransberg et al., 1996). The magnitude of human morbidity and mortality associated with waterborne infectious diseases has led to the design and development of epidemiological surveillance studies (Borrego and Figueras, 2000).

The most important factor determining the microbial health-hazard associated with water is the infectious dose (ID) of the pathogenic organism (Borrego and Figueras, 2000). The concentration of pathogens in natural waters will depend on the number of infected persons and/or asymptomatic carriers in the community, the effectiveness of the wastewater treatment system and the dilution and natural self-depurating capability of the receiving waters (op.cit.)

Those responsible for public health recognise that preventing the pollution of recreational waters, and in particular contamination with sewage, will reduce the incidence of water-related infections and diseases caused by ingesting contaminated water. Recreational water quality standards are targeted specifically to waterborne diseases.

Sustainable use of recreational facilities and shellfish growing areas need multidisciplinary risk management and pollution control programmes which take into account the growing, and seasonally fluctuating, population.

In shellfish growing areas, monitoring programmes are needed based on algae counts, mouse-test and an assessment of toxin levels in mussels and oysters (Car & Jasprica, 2004). Surveillance of the phytoplankton can give advanced warning of algal blooms and impending toxicity allowing for preventative action such as early harvesting of shell fish or closure of areas before toxins accumulate in seafood. Monitoring is essential for marine fish farms to protect against fish-killing flagellates and dinoflagellates. Several countries have monitoring programmes.

Health surveillance of the general population and tourists is also recommended to strengthen reporting of algae illnesses.

3.1.4.3 CURRENT GUIDELINES FOR RECREATIONAL WATER

The WHO Guidelines for Safe Recreational Water Quality are intended to protect public health and to provide a basis for the development of international and national controls. They represent a consensus view of experts of the risk to health represented by the various media and activities associated with the use of recreational waters and are based on a critical review of the available evidence. The two volumes cover coastal, freshwater and swimming pools environments:

Guidelines for Safe Recreational Water Environments. Volume 1: Coastal and Fresh Waters (2003)

Guidelines for Safe Recreational Water Environments. Volume 2 Swimming pools and similar environments (2006)

Monitoring Bathing Waters. A practical guide to design and implementation of assessment and monitoring programmes. Bertram & Rees (Eds) WHO, 2000.

Monitoring Bathing Waters includes the '**Code of Good Practice for Recreational Water Monitoring**', a framework developed by WHO for the design and implementation of a scientifically credible monitoring programme. The Code links key health issues, monitoring and assessment strategies and principal management considerations, with sufficient detail and cross referencing to the Guidelines, designed to allow a manager to establish a valid monitoring programme (WHO, 2003, pxxx).

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3.1.5 SUN AND HEAT

Overview

Global temperatures are increasing at an unprecedented rate and current climate change is directly attributed to emissions of carbon dioxide and other green-house gases resulting from human activity (Gilman et al., 2005).

One result is that human exposure to ultraviolet (UV) radiation is increasing as carbon dioxide interferes with the recovery of the upper atmospheric ozone layer (ACIA, 2004).

A major attraction of the Mediterranean for tourists is its sunny, warm climate and numbers have increased as air travel has become more affordable and accessible. Small amounts of UVR are beneficial for well-being and required for the production of vitamin D, essential to bone health. Possible beneficial effects on some cancers and immune disorders are currently under investigation (WHO report, 2006). However, prolonged exposure to solar UV may result in acute and chronic ill health effects, the most serious of which are skin cancer and malignant melanoma (op.cit)

Ill Health Effects Of Excessive Exposure To Sunshine

Terrestrial solar ultraviolet radiation (UVR) includes both UVB and UVA, both of which can be damaging to the skin and eyes. Intensity depends on latitude and the time of year and day. It is measured by the Global Solar UV Index, which was developed by the WHO, with UNEP and the World Meteorological Organization. The higher the value of the index, the greater the potential for damage, and the shorter time for it to occur, with values greater than 10 considered extreme. In general, the Index is highest at points closest to the equator, and UVB radiation is particularly intense in the summer and in the middle of the day (Young, 1994).

The most obvious harmful acute effect of UV radiation is erythema or sunburn, which is an inflammatory response. UVB is 3 times more harmful than UVA in this respect.

Exposure of the eyes may result in keratitis (snow blindness) which in the long term may lead to the development of cataracts, pterygium (a fleshy growth on the surface of the eye) or, rarely, squamous cell carcinoma of the eye.

Long term effects are skin cancer (non melanoma and melanoma), and accelerated aging of the skin (photoaging) which is mainly due to UVA. Even a short period of intense exposure, as in sunbathing, is associated with a 2-fold increase in melanoma risk (WHO, 2006). Sensitivity to all these conditions depends on skin type with fair skins being the most sensitive.

A wide range of medicinal drugs may cause photosensitization which can interact with sunlight causing adverse reactions such as phototoxic or photoallergic dermatitis. Phototoxic contact reactions may also be caused by topical application of some cosmetic products, including perfumes and oils.

Exposure to UV radiation may suppress the immune system, increasing the risk of infections. Efficacy of vaccinations could also be limited.

Extent Of The Problem

In July 2006 a new report *Global Burden of Disease of Solar Ultraviolet Radiation*, estimated that 60,000 deaths per annum are caused by too much exposure to UVR. Of these around 48,000 are attributed to malignant melanoma and the remainder to skin carcinomas. Malignant Melanoma has a high cure rate, only if it is detected early (op.cit.)

Skin cancer rates are increasing in many parts of the world including Europe (WHO, 2006). A part of the reason for the rise can be explained by the more recent affordability and accessibility of airline travel, particularly to warm and sunny destinations.

Prevention

The INTERSUN programme is the World Health Organization's global UV project which provides information and advice about the affects of UV radiation and encourages countries to take mitigating action. Besides identifying and quantifying the health risks from UVR, and monitoring change over time in relation to environmental and behavioural change, the INTERSUN project collaborates with specialist agencies to identify gaps in knowledge and implement research activity (www.who.int/intersunprogramme/en/).

Most of the diseases caused by UVR could be prevented very simply (WHO, 2006). There is a strong connection between some environmentally caused disease and the proactive and protective effects that can come from better public health policy; international, national, regional and local strategies are needed in order to successfully adapt to, and manage, the risks (Gilman et al., 2005).

Sunscreens designed to filter UVB are very effective in protecting against erythema. Filters for UVA are also available. Efficacy is expressed as Sun Protection Factor (SPF): $SPF = MED \text{ with sunscreen} / MED \text{ without sunscreen}$. There is very little difference between SPF 15 (absorbs 93.3%) and SPF 40 (absorbs 97.6%). There has for example been a recent UK lead consumer drive for higher levels of UVA protection in sunscreens because longer solar exposure is often thought by the public to be acceptable with higher levels of UVB protection. However, this allows accumulation of large doses of UVA, the consequences of which are unknown.

If a person uses SPF factor 6 to stay in the sun 6 times longer, there is no protection (Young, 1994) which emphasises the importance of **public education** in the use of sun screens.

It is not known how well sunscreens protect against DNA photolesions, thought to be first step in skin cancer, but they are known to not necessarily protect against systemic UV-induced immunosuppression which is thought to have a role in non-melanoma skin cancer.

Education

Tourists can take precautions to avoid the negative effects of exposure to sunlight, and information is widely available in pharmacies, travel clinics, websites etc. Information leaflets for tourists and for tourism operators can be found on the WHO/INTERSUN website at (www.who.int/intersunprogramme/en/).

Tourism industry representatives can play a crucial role in minimizing the risks associated with sun exposure by disseminating information to their clients.

The World Health Organization encourages the tourist industry and the media to report forecasts of the maximum level of UVI, and the INTERSUN programme has developed UV Index graphics for this purpose, using an international colour code. People are accustomed to watching and acting on routine weather forecasts and if UVI levels for the next day are included in these, they can take appropriate action to protect themselves.

The following tips are provided by the WHO publication *International Travel and Health 2005*:

- Avoid exposure to the sun in the middle of the day, when the UV intensity is greatest;
- Wear clothing that covers arms and legs (summer clothing is UV-protective and generally more effective than even good-quality sunscreen);
- Wear wrap-around UV-protective sunglasses and a wide-brimmed sun hat;
- Apply a broad-spectrum sunscreen with protection factor (SPF) 15+ liberally on areas of the body not protected by clothing, and reapply frequently;
- Take particular care to ensure that children are well protected;
- Take precautions against excessive exposure in or on water – UV radiation can penetrate clear water to a depth of 1 metre or more;
- Check that any medication being taken will not affect sensitivity to UV radiation;
- If adverse skin reactions have occurred previously, avoid any exposure to the sun and avoid any products that have previously caused the adverse reaction.

In the latest WHO report (2006) additional advice is:

- Avoidance of sunlamps and tanning particularly for under 18s;
- Know the UV Index.

Health education programmes

With the launch of its 2006 report, WHO joined with UNWTO to distribute information, including a new UV flyer, to all national ministries responsible for tourism.

Governments are advised to use the UV Index as an educational tool in public health promotion programmes.

In some countries public behaviour has been significantly changed by health education programmes, for example *Slip on a shirt, Slap on a hat, and Slop on the sun cream* in Australia and New Zealand. The effect is thought to have reduced tumour incidence. Clear evidence of this however is not yet available.

Education of the public and general practitioners is also needed to encourage early investigation of changes in skin moles.

National and local action

Tourist resorts could help by providing more shade in the form of trees, or providing beach umbrellas, roofed verandas etc. to protect holiday makers.

Public health agencies can promote education and awareness programmes e.g. Slip, Slap, Slop, or using INTERSUN materials.

Local intervention programs initiated by local people trusted by the community may be effective.

National and international strategies to reduce global warming

Urban planning to reduce reliance on private automobiles can contribute to reduction of greenhouse gas emissions from vehicles and will also reduce urban outdoor pollution levels and reduce traffic accidents (q.v. Section 3.4.4).

New environmentally benign energy technologies are needed which are affordable yet give off few air pollutants or greenhouse gasses (Goldemberg et al., 2001) and government subsidies need to be directed at renewable energy.

Some countries have early warning systems for episodes of high temperature or air pollution and high UV exposure days, which advise people to reduce outdoor activity. These markedly reduce hospitalization and premature death. The conference needs to consider the worth of gathering evidence of such patterns and associations in the different Mediterranean countries.

The Djerba Declaration on Tourism and Climate Change (2003), which encourages the tourism industry to adjust its activities to become more energy-efficient with cleaner technologies, further highlights the interdependence of tourism and environmental issues.

Other Adverse Health Effects Of Heat And Humidity

Other effects of changing climatic conditions damaging to health are heat waves and air pollution which can cause considerable ill health and loss of life (WMO 1999).

Exposure to heat and humidity results in loss of water and electrolytes and may lead to heat exhaustion and heat stroke. Consuming additional fluids and salt can help to prevent this. The old and the very young are particularly susceptible to dehydration (International Travel and Health, 2005).

Heat and humidity can cause skin irritation (prickly heat) and aggravate existing fungal skin infections such as tinea pedis (athlete's foot). Hot, dry and dusty air may irritate the eyes and respiratory tract, which may result in infection (International Travel and Health, 2005).

In August of 2003 Europe experienced a 10-day heatwave, during a summer which had already been hotter than usual in the preceding two months, and this was accompanied by greatly increased mortality. Estimation of the number of excess

deaths attributable to the heatwave is complex, because of lack of information on the number of deaths reported to be from heat illness, but some cities in central France reported a 100% increase in mortality during the heatwave (Kovats et al). Looking towards the future, a recent climate change report for the European Commission anticipates that by the year 2070 in Southern Europe there will be an extra 87,000 deaths a year caused by temperatures 3 degrees C hotter than at present and that the sea level could rise by one metre (Charter and Baldwin, 2007). Unpublished data have suggested too that superimposed on the experience of 35,000 people dying across Europe during the Summer 2003 heatwave and a possible 6 degrees C rise in temperature expected in Spain, there could be consequences for the home owners of 800,000 new homes being built at present there each year (BBC Radio News, January 2007).

Most excess mortality was in those aged 75 and over and across a wide range of causes of death, but particularly cardiovascular or respiratory disease. More than 60% of these deaths occurred in hospitals, private healthcare institutions and retirement homes. It is possible that some of the excess mortality was due to short term displacement in mortality of the very ill, which would show up in a fall in death rates immediately following a heatwave.

High levels of air pollution (tropospheric ozone) were recorded in several cities; the interactions between air pollutants and temperature exposures are not well understood.

Precautions

It is argued that a heatwave is a serious risk to health and local and national governments should think of having management strategies similar to those in respect of an epidemic of a communicable disease, including prediction, detection and prevention as well as rapid response from health and social systems. The World Health Organization has recommendations for short term and long term strategies for reducing the health impacts of heatwaves (Koppe et al, 2004).

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3.1.6 NOISE POLLUTION

Overview

Environmental, or community, noise resulting from road, rail or air traffic, construction work, industry or neighbourhood activity can be harmful to health and well-being. Excessive noise pollution has been shown to have adverse effects on communication, concentration and learning, performance, behaviour and sleep, as well as damaging hearing. It can also cause irritability, heartburn, indigestion, ulcers, high blood pressure and possibly heart disease. A single burst of noise, such as from a passing truck, has been shown to alter endocrine, neurological and cardiovascular functions in many individuals, disturbances which tend to become chronic if the exposure is prolonged or frequent. Noise induced stress creates severe tension and contributes to mental illness (www.noiseabatementociety.com). Possible mechanisms whereby noise might induce cardiovascular effects are based on activation of the sympathetic and/or endocrine systems. Some authors have suggested the possibility that effects might be seen only in those annoyed by noise, in which case subjective assessment of noise might be a better predictor than objective measures; however, in studies with objective and subjective measures, the former performed better (McNamee et al., 2006).

Noise intensity is measured in decibel units on a logarithmic scale, so each 10-decibel increase represents a tenfold increase in noise intensity. Human perception of loudness also conforms to a logarithmic scale, so a 10-decibel increase is perceived as roughly double the loudness and 30 decibels is 10 times more intense than 20 decibels and sounds twice as loud. 40 decibels is 100 times more intense than 20 and sounds 4 times as loud and by the time noise has reached 80 decibels it is a million times more intense than 20 decibels and sounds 64 times as loud.

Distance diminishes the decibel level, and so does being indoors. Moderate traffic noise at 30m rates about 50 decibels but to a pedestrian on the sidewalk this would rate about 70 decibels, or 4 times louder.

The average person subjected to 45 decibels of noise cannot sleep and at around 120 decibels the ear begins to register pain. Hearing damage can begin much sooner, at around 85 decibels, but duration of exposure is also a factor, with hearing sensitivity decreasing over time if exposed to excessive noise.

It has been estimated that in the EU around 40% of the population are exposed to traffic noise with an equivalent sound pressure level exceeding 55 dB/A in the daytime, and 20% are exposed at night to equivalent sound pressure levels exceeding 55 dB/A which are sleep disturbing (Sobotova et al, 2001).

Night Time Noise

An important part of the holiday experience for many tourists is night time entertainment, including bars, nightclubs and discotheques, all of which are potential

sources of noise pollution. Night time noise causing sleep disturbance is particularly distressing for those not enjoying such amenities, whether they be locals or tourists requiring a quieter holiday. Lack of sleep may in turn lead to daytime fatigue and potentially increase the risk of accidents (WHO, 2004).

Many factors influence the way in which noise is perceived, for example pre-dispositions such as noise sensitivity or a family history of hypertension, or diseases such as depression or cardiovascular disease. Certain groups may be particularly susceptible to sleep disturbance, such as elderly, pregnant or peri-menopausal women, people with primary insomnia, co-morbid physical/ mental diseases or existing stress. Other factors which make a difference are whether the noise is high or low frequency, whether there are combined exposures and the difference between background and peak levels (WHO, 2004).

Noise associated with Construction and Supplies to Tourist establishments

A study near Valencia in Spain that monitored noise levels from heavy goods vehicles in three locations found that within the community noise was the origin of disturbance and indisposition (reported in: Lester and Temple, 2006). Disturbance to nearby occupants of hotels, apartments, campsites and houses during remediation or other building works is also inevitable. It can however be reduced by for example, withholding work during unsocial hours, the use of mufflers and screening of noisy equipment, double glazing of windows, drivers not leaving engines running while not in transit, and good resort and town planning for the siting and control of noise-producing industries and facilities.

Noise in Hotels

The thickness of the walls or partitions and provision of sound insulation and double glazing is important in reducing noise travel. There should be soundproofing of bedrooms with regard to noise coming from outside the hotel, other hotel areas such as common areas and other bedrooms and the technical installations of the hotel and bathrooms and toilets, and at decibel and frequency levels which are at least tolerable for both day and night stays (Philipp and Hodgkinson, 1994).

Control Measures

Noise is a controllable pollutant. Sometimes solutions can be very simple, for example the introduction of rubber dustbin lids and plastic milk crates, and the banning of night flights over urban areas (www.noiseabatementociety.com). WHO published *Guidelines for Community Noise* in 2000 with recommendations on guideline values and management. In the same year, a WHO working group and a workshop developed fundamental principles, based on behavioural, bio-medical, ecological, engineering and ethical considerations, on the Right to a Supportive Sound Environment (Lindvall, 2000).

Priorities in noise management vary from country to country, according to policy objectives, needs and capabilities, but are based on reducing health risks by concentrating on the most important sources of noise (WHO, 1999). In tourist establishments, it is particularly important that public and environmental health departments avoid the adverse health risks which could arise from the potential increase in noise pollution during the holiday season by reducing noise levels as far as possible for the benefit of both visitors and the local population. Noise management

policy encompasses laws and regulations for setting standards and ensuring compliance (WHO, 1999). Local measures may include:

- land-use planning, e.g.
 - the siting of accommodation away from industrial areas or transport terminals;
 - siting of night clubs etc away from residential areas;
 - by-pass roads for heavy traffic;
- traffic regulation, e.g. speed limits, banning of night flights etc;
- requirements for sound proofing insulation in buildings;
- regulations to control unnecessary noise such as use of car horns, loudspeakers etc;
- raising public awareness by education and enforcement;

A good example of public awareness raising is with measures to introduce a mobile phone etiquette to help avoid them becoming a public health nuisance by intruding on the '*private space*' of other people. At least in Italy the following measures have been observed for their considerate use in enclosed public spaces and other public places where other people are nearby such as bathing beaches, hotel and municipal swimming pools, public transportation, hotels, supermarkets, railway stations and airports:

- choosing a mobile phone incoming call sound alert that is gently tuneful, calming and not strident and intrusive;
- ensuring the volume of the incoming call alert is kept as low as reasonably possible;
- turning off the incoming call sound alert and relying on the vibration alert;
- checking the phone screen for incoming call numbers that truly need to be answered immediately;
- ensuring the voicemail facility for message recording is activated;
- cupping one hand in front of one's mouth when speaking to help block sound waves being spread about;
- talking quietly;
- keeping conversations brief and to the point.

Hotels, tour operators, and municipal authorities may wish to produce a small credit-sized plastic card with this Code of Good Practice for the Considerate Use of Mobile Phones that could be given to tourists and the local public and included with mobile phone sales and rentals. The information could also be incorporated into hotel and holiday brochures and the information available in tourist establishments for guests.

'*Quiet rooms*' are also increasingly being incorporated into public buildings and to other places such as some railway carriages as designated places for rest, reading, contemplation, study and meditation.

Guidelines on night time noise are currently being developed (WHO Regional Office for Europe, 2004). Evidence of night time noise effects on health are being reviewed, and the magnitude of associated health risks estimated, in order for guideline values to be proposed for short and long-term exposure. The project will support the development of future legislation.

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3.1.7 WELL-BEING AND AESTHETICS

Overview

The need to provide environmental opportunities for aesthetic experience is recognised in neighbourhoods, schools, hospitals, workplaces, villages and islands (Giroult, 1988; Velimirovic, 1988; Diomidis, 1990). Environments with high aesthetic quality provide pleasurable places to be for contemplation, personal reflection, enjoyment, relaxation and replenishing the soul; they encourage a healthy personal outlook (Philipp et al, 1999). A need for new training materials on the aesthetic aspects of housing and human settlements has also been identified (Philipp and Wood, 1992). In conjunction with these needs, improved understanding is however needed of the word, 'aesthetics'. It is defined in the Oxford Dictionary as: "having an appreciation of the sense of beauty in accordance with the principles of good taste", and it has been reported that the aesthetic response involves emotions that include being 'uplifted', 'moved', 'exhilarated' and 'entranced' (Eaton, 1995). 'Aesthetic' therefore implies the presence or possession of qualities that are pleasing to the senses (Philipp, 2000).

It has been suggested that 'healthy tourism' is an important component of the 'Healthy Cities' initiative (WHO, 1997). For healthy tourism, the infrastructure should therefore provide pleasant, aesthetic surroundings, including accommodation and alimentation, and a clean environment free of accident hazards and nuisances (WHO, 1997). For recreational value and mental health, aspects of architecture and convenience of facilities are also important (op.cit).

To help design studies that explore the associations of health, well-being and aesthetics, the 'aesthetic quality of an environment' has been defined as:

'The extent to which an external factor or combination of factors evokes a pleasurable emotional response from the stimulation of our five bodily senses of sight, sound, smell, taste and touch. This response establishes a resonance within ourselves and with the external factors responsible for that stimulation. Resonance helps to promote positive affirmation of ourselves, enhance our well-being and encourages

positive identity with the causal environmental factors' (Philipp et al, 1999; Philipp, 2000).

Neuropsychologists have taken these concepts further. They for example, describe '*peak experience*' as a feeling of deep, contemplate correspondence between the bodily inner state and the outer landscape; for this, the neocortex of the human forebrain has been described as the thinking brain, of which: '*the left hemisphere is Apollonian; verbal, mathematical, logical, deductive, and oriented towards the external environment ('outward bound'), whereas the right hemisphere is Dionysian: holistic, intuitive, spatial, pattern-recognising, and concerned with inner spaces ('inward bound')*' (Porteous, 1996).

Nevertheless, in our efforts to identify suitable indicators and appropriate standards of environmental quality for our subjective, personal, intuitive ideals, we as individuals and populations are, unfortunately, not always aware of those environmental values we want to keep, or those we have lost and should seek to recover; the subjective ideals can be difficult to appraise and measure (Philipp, 1992a; Philipp, 1992b; Philipp, 2000). Improved understanding is however important for sustainable development and the quality of life. Yet, although the interdependence of aesthetic quality, environment, health and well-being is recognised by the World Tourism Organisation (Handszuh, 1991), and increasingly important for our quality of life (Philipp, 1996), it is relatively little-studied and remains poorly understood.

It has even been suggested that: '*the economic life is today the real bond of the civilised world*' (Tennyson, 1998). The quality of tourist establishments therefore has an amenity value and is important for the sustainability of economic, social, cultural and environmental well-being. Indeed, the WHO European Charter on Environment and Health (1989) states:

'good health and well-being require a clean and harmonious environment in which physical, psychological, social and aesthetic factors are all given their due importance'.

Research is therefore needed to understand better aesthetic health threshold limit values, their relationship to nuisance thresholds, and the effectiveness of control measures. It is needed if we wish to move beyond at least one definition of a '*nuisance*' as: '*something which is undesirable but can be endured if getting rid of it is painful, difficult or expensive*' (Editorial, 1986). Some progress has occurred. For example, the WHO Air Quality Guidelines for Europe define a nuisance threshold as: '*the level at which less than 5% of the population experiences annoyance for less than 2% of the time*' (WHO, 1987). The guidelines note that value judgements are inevitable and that many psychological and socio-economic factors influence annoyance. This definition provides however, as baseline for future research and cost-benefit analysis with, for example, problems associated with perception of odour, acoustic and light pollution, atmospheric and recreational water visual clarity, visual perspective associated with harmony, colour, clutter and obstruction in the built environment, and the density of litter deposition in public places such as parks, streets, picnic areas and bathing beaches (Philipp, 2000).

The importance of visual amenity with aesthetic quality should not be underestimated. Thus, some towns and cities are for example introducing a ‘*Dark Skies*’ policy so that wherever possible downward facing, focused lighting is there to reduce light pollution so that the stars are rendered more visible and so that the view can be better enjoyed and allow the consequent evoking of pleasing imagery. Another example is the increasing use of water features such as fountains, water sculptures, ponds and cascades in public buildings such as hospitals, libraries, schools, shopping centres and office buildings, and in town squares, to open up spaces, give welcomed opportunities for meeting, gathering, enjoyment, contemplation, reflection, pleasure and humour, and for positive ionisation of the ambient air to help impart a sense of freshness in the air. These developments are part of the increasing awareness that it is important for mental health and emotional well-being to be able to see movement, experience motion, enjoy rhythm and sound and to avoid intrusive noise.

Fresh air has more negative ions which are thought to explain why many people find being outdoors is refreshing and relaxing. In addition, our ability to relax can be enhanced by contemplating natural beauty such as the flight of a bird, the shape and form of clouds or a tree and its leaves, and the feeling of a light breeze on the skin or the warmth of sunshine. This is not just a matter of simply liking nature. The patterns of natural phenomena are pleasing to the eye, and possibly to other bodily senses such as touch, hearing, smell and taste because they have a certain structure called fractal. Fractal patterns have two important qualities. Firstly, there is always complexity in them whatever the scale; secondly, although patterns repeat in them, the repetition is never identical. This mixture of continual change and repeated patterns is thought to remind us not only of the basic patterns in life and their familiarity, but to be soothing to the eye as it for example, likes to observe difference. It is the combination of difference, repetition and complexity that people find relaxing (McKenna, P., and Willbourn, H. 2003).

Two worked examples follow:

Example I: The Importance of Aesthetics for Recreational Water and Bathing Beach Quality:

Problems associated with the aesthetic quality of recreational waters and bathing beach quality have been emphasised in several WHO and United Nations Environment programme reports. They reflect increasing concern about the unstable relation between population, health and a sustainable environment, the aesthetic, physical injury and microbial problems of uncollected refuse and discarded litter, mixing of domestic, general and clinical waste, safe sewage disposal and fears that environmental degradation of bathing beaches could lead to loss of tourism (Philipp et al, 1997).

People, it seems, make their decision to use recreational waters principally on the appearance of the water (Shah et al, 2000). In Rimini, Italy, in 1989, tourist bed occupancy during mid-summer dropped to 50% of total capacity associated with red algal blooms of the sea water. In 1990, following a recommendation of the Second International Conference on Tourist Health that environmental quality objectives could be better considered in environmental debates for standards setting, it was recommended that aesthetic standards and indicators for the quality of bathing waters

could be usefully developed and agreed by Member States (WHO, 1990). This recommendation was then linked to findings of the Coastwatch UK studies which were undertaken annually between 1991-2000 for time trends of the annual rate of different litter, sanitary and medical waste items. Some 6000 volunteer fieldworkers were involved each year and they covered 15% of the UK coastline. The time trends between 1991 and 1994 for the number of medical items per Km of coastline surveyed showed a four-fold deterioration in the environmental quality of bathing beaches (Philipp et al, 1994; Philipp et al, 1997). A concurrent health economics audit of needlestick injury data from bathing beaches identified considerable direct health service costs from treating the injuries (Philipp, 1993). From all the findings it was concluded that provision of litter bins, regular refuse collections and beach cleansing was insufficient and that a greater sense of personal responsibility and individual accountability was needed. Public education programmes were then introduced widely and legislation for 6mm fine wire mesh grids at all storm water and shore line sewage discharge points was introduced to help improve the quality and range of environmental controls (Philipp et al, 1997). Associated with their economic value WHO has accepted the importance of such aesthetic factors (Williams et al, 2000; WHO, 1998).

Example II: The Importance of an Aesthetics of Mediterranean Landscape Quality:

Positive imagery and its association with well-being is used to advertise tourist destinations in the Mediterranean. For example, the beaches in Catalonia, Spain, have been advertised, at least in the UK, as '*Painted Beaches*', and with the accompanying information: '*They call them beaches, but they are art works. Fine sandy beaches, large or small, with pine trees or with rocks, beaches that have inspired artists and are now in museums. Because in Catalonia you find the sea even when you are not looking for it. And when you least expect it, it gives you the landscapes that made the dreams of Dali come true, revelling him in a different way of seeing things. Wouldn't you like to see it?*' (Focus Report, 2006). In respect of visual treats for the enjoyment and well-being of tourist visitors, this newspaper advertisement was accompanied by an article reporting: '*But it is the striking architecture that provides Catalonia's most dramatic visual treats, from Antoni Gaudi's iconic La Sagrada Familia to the modern buildings that dominate Barcelona's skyline, a legacy of the 1992 Olympics*' (Watts, 2006).

To assist with ways forward for further research in local areas of the Mediterranean Region for the influence of aesthetic factors on health and well-being, two research methodologies have been devised:

1. '**The Value To Human Well-Being Of Local Qualities And Characteristics**';
2. '**The Dimensions Of Well-Being And Local Support For It**'.

These research methods are presented in Section 5 of this Report: '**Structured Frameworks for Assessing Health Risks Associated With Hazards In The Mediterranean**'.

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3.2 **GROUP B: FOOD SAFETY AND THE STANDARDS OF EATING ESTABLISHMENTS**

Food Safety

The WHO Regional Centre for Environmental Health Activities (CEHA) (www.emro.who.int/ceha/) have estimated that, in 1995 in the Eastern Mediterranean Region, 190 million cases of acute diarrhoea occurred, including 20 million moderate or severe cases that resulted in approximately 350 000 deaths. Contaminated food is thought to be a leading cause of sickness throughout the Region, and it is estimated that only a small fraction of all food borne diseases are currently recognized and reported. The ratio between actual cases and notified may be as high as 100 to 1. In the EU in 2005, 5,311 foodborne outbreaks were reported, involving 47,251 people and resulting in 5,330 hospitalisations and 24 deaths (http://ec.europa.eu/dgs/health_consumer/foodsafety_en.htm).

In Europe, food hygiene is covered in the EU directive 93/43 which came into effect in 1995 and sets out the requirements for issues in the food and hygiene sectors. http://www.bulltek.com/English_Site/ISO9000_Introduction_English/HACCP_English/HACCP_EU/haccp_eu.html This includes the use of an HACCP system. All food businesses now have to demonstrate in written records what they have done to ensure that the food they are serving is safe to eat, which includes having an HACCP system in place. HACCP – hazard analysis, critical control points – shows how, why and where food can become contaminated and what has been done to prevent this from happening. It requires accurate and up to date record keeping.

HACCP cover all stages of preparation from preparation of ingredients to sale to the customer with each step carefully analysed to identify potential hazards such as bacteria, foreign bodies, chemical contaminants or, in the case of allergen-free food, potential allergens. Control may include separation of raw and cooked foods to avoid cross contamination, personal hygiene rules to avoid contamination by bacteria, and correct cooking times and temperatures to ensure that harmful bacteria do not survive.

Standards, or critical limits, are set for each of these controls, which specify the conditions which must be met to ensure that the food will be safe. Regular monitoring of the system is essential and any change of recipe, or activity will require an update of the HACCP system.

HACCP Check List

- decide who will develop your HACCP system;
- draw a flow chart of your food preparation processes;
- identify where food safety hazards can occur;
- identify what can be done to control hazards;
- identify corrective action when monitoring shows that controls aren't working;
- review the HACCP system after a year;
- keep all documentation and records.

In the UK, penalties for breaching food safety regulations include a large fine or up to 2 years in prison.

CEHA have been introducing and strengthening HACCP systems in the EMR since 2003.

3.3 GROUP C: HOTEL SAFETY STANDARDS

Slips, trips and falls are probably the commonest accidents suffered on holiday (Philipp and Hodgkinson, 1994). Although data are not readily available for similar accidents involving persons in tourist establishments in the Mediterranean, safe systems need to be ensured. Balconies and their balustrades may not be secure and the height is often not sufficient to stop someone overbalancing and falling. It must be ensured that children cannot fall out of windows, and that if necessary safety catches are fitted. Glass doors, unless fitted with safety glass, can be a particular hazard to children running about and even more so if the floor surface is slippery or there are loose rugs or mats on the floors. Entrance ways, stairs and passageways must be kept free from obstruction and well-lit. Stair rods and carpets must be secure. Warning signs are needed with wet or freshly polished floors. Cleaning and disinfecting chemicals which may be provided and left in buildings and other accommodation should be clearly labelled and kept out of reach of children (Philipp and Hodgkinson, 1994).

The enforcement of adequate standards of fire prevention and electrical safety are additional, principal safety factors. The World Tourism-recommended standards include the provision of smoke detectors, alarm systems, fire-fighting equipment, emergency exits, stairways and prominently displayed instructions; for self-catering tourist accommodation these instructions should include information about taking care not to start fires with cigarettes, or with fat frying and chip pans (Philipp and Hodgkinson, 1994). Visitors are advised to check for signs of antiquated electric lighting or wiring, or poor installation, and not use faulty or damaged electrical appliances; about 95% of faults or damage can be found just by looking for signs of taped joints, loose or bare wires, cuts or abrasions to the cable covering, damage to the plug such as cracked casing or bent pins, obvious loose parts or screws, and burn marks on the equipment. They should make sure their own appliances are compatible

before using them abroad and remember never to handle plugs, switches or any electrical appliances with wet hands and make sure the appliances are thoroughly dry before use (Philipp and Hodgkinson, 1994).

In 2006, the deaths of two small children from carbon monoxide poisoning whilst on holiday in Corfu has led to renewed focus on health and safety standards in holiday accommodation. Although manslaughter charges against the hotel manager are likely, a spokesperson for Corfu's Association of Hotel Managers insists that tourist accommodation is safe and meets the safety rules and regulations of the European Union and tour operators (<http://news.bbc.co.uk/1/hi/world/europe/6093714.stm>). It was said to have met the Federation of Tour Operators' requirements.

Carbon monoxide is a product of incomplete combustion of natural or petroleum gas. It may be inhaled if flues and chimneys are blocked so that the gas cannot escape, and the blood's ability to carry oxygen is then impaired, leading to starvation of organs and cells. Chimneys, flues and gas appliances and heating systems should be inspected regularly as deaths are usually the result of badly fitted flues and appliances. In the UK, 50 people die each year in their homes from accidental carbon monoxide poisoning and accidents in tourist accommodation are not infrequent (q.v. Section 3.1.1.2).

Interest is also accruing in the association of childhood asthma with the availability of indoor swimming pools in Europe; exposure to trichloramine and chlorine associated with higher water temperatures in recent decades, increased bathing loads and the installation of recreational equipment in the pools are thought to be causal factors, and improved ventilation an important preventive measure (Nickmilder and Bernard, 2006).

Monitoring and Regulations

Travel Industry professionals (tour operators, travel agents, shipping and airline companies) have a responsibility to safeguard the health of their clients and ensure that they have the latest information but specific standards are not formalised in European legislation. Some professional bodies, such as the Federation of Tour Operators (FTO) and the Association of British Travel Agents (ABTA) have attempted to address this.

In December 2006 the Federation of Tour Operators called for European legislation on gas heater safety standards, backed up by proper compliance procedures. They also want to see fire safety legislation in accommodation where no common standards exist. The FTO have been campaigning for this with the Consumer Safety International for 10 years. In the meantime they follow their own Best Practice Guidelines, part of a series of initiatives developed by FTO's Responsible Tourism Committee to help tour operators to integrate responsible tourism into their core business. (www.fto.co.uk/responsible-tourism/best-practice/)

In November 2006, The Association of British Travel Agents (ABTA) announced a new Health and Safety initiative which will enable its Members to access a reliable, independently audited hotel database which will ensure that the accommodation

offered by its Members is fully compliant with stringent health and safety requirements.

Tour operators have traditionally taken responsibility for checking the accommodation they use and consumers have had the right to bring legal action against them under the Package Travel Regulations (Directive 90/314/EEC). With changing customer demands requiring more flexibility in holiday packaging, the legal liability for the health and safety of their customers may fall on travel agents.

Early in 2007, as part of an action plan to address this, ABTA will be launching an essential health and safety audit tool for all its Members, to enable them to properly assess and manage the risks they face. Hoped for benefits include improved quality, standards, reputation and consumer confidence.

The United Nations World Tourism Organisation (WTO) supports the creation and maintenance of safe environments for world tourism and the monitoring of tourism related risks. It has a recommended hotel classification which includes items related to tourist health (Handsuch, 1990). The WTO stipulates that all installations, equipment and furniture in tourist accommodation bedrooms, sanitary facilities and common rooms and areas should be good for heavy use, functional and safe, mutually harmonised and proportional in size to the area in which they are located, and that the buildings and all items on their premises should be kept in perfect condition as regards operation, wear and presentation, and that health and safety for the maintenance and construction workers there must also be a priority (WHO, 1983). The WTO website has now started a safety and security network for tourism, aimed at both professionals and the public, which so far has published details for several member states including such things as contact details for the person designated to answer queries on tourist safety in his country, and emergency numbers. Several but not all of the Mediterranean countries are included (http://www.unwto.org/quality/safety/en/safety_02_3.php?op=5&subop=32)

The site also includes recommended measures for tourism safety from the 1991 resolution A/RES/284 (ix) of the General Assembly of WTO, 9th session (www.unwto.org/quality/safety/en/safety_01_1.php?op=5&subop=27) which include every state taking the necessary measures to identify risks and adopt safety measures and standards in such areas as: fire protection; food safety; sanitary and health requirements; environmental safeguards.

The FTO have also produced ‘Sustainability Guidelines for Suppliers’ at www.fto.co.uk/responsible-tourism/sustainability-guidelines/

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3.4 GROUP D: SITUATIONAL FACTORS ASSOCIATED WITH LEISURE, TRANSPORT & OTHER ACTIVITIES

3.4.1 CRUISE SHIPS AND MEDITERRANEAN PORTS

On board a ship people live in close proximity in a relatively enclosed space, with shared sanitary facilities and common water and food supplies, all conditions which could potentially facilitate the spread of infection. Many older people, who may be particularly vulnerable to infection, are attracted to cruise ship holidays and their popularity has increased in recent decades (Rooney, 2003). However there is a high risk of gastrointestinal infection resulting from contaminated food or water or poor hygiene standards.

Health Risks

Between 1970 and 2000 a literature review (WHO) identified over 100 gastrointestinal disease outbreaks associated with ships but many more are thought to go unreported (Rooney, 2003). Most were associated with cruise ships and linked to food or water consumed on board. Pathogens involved included *Vibrio parahaemolyticus*, *Salmonella* species, Hepatitis A, enterotoxigenic *Escherichia coli*, enterohaemorrhagic *Escherichia coli* O157, *Shigella* species, *Staphylococcus aureus*, Norwalk-like virus (NLV), *Cryptosporidium*, *Gardia lamblia* and *Cyclospora*. Contributing factors identified included contaminated bunkered water, inadequate disinfection of potable water, potable water contaminated by sewage on ship, poor design and construction of potable water storage tanks, deficiencies in food handling, preparation and cooking, and use of seawater in the galley.

The second main disease associated with ships is Legionnaires' disease and the WHO review identified 50 incidents, involving 200 cases, over the three decades reviewed. In 1994, an outbreak on a single cruise ship affected 50 passengers over 9 cruises and was linked to a whirlpool spa on the ship.

Prevention and Guidelines

The *WHO Guide to Ship Sanitation*, which is referenced in the International Health Regulations, is the official global reference on health requirements for ship construction and operation which apply to all ships including passenger ships and fishing vessels. It standardises sanitary measures to safeguard the health of travellers and prevent the spread of infection from one country to another. The Guide was recently revised and updated for the third edition in 2005. It covers preventive environmental health management including water supply in ports, water production, treatment and distribution on ship, swimming and spa pools, waste disposal, food safety and vermin and vector control. The Guide also includes recommendations for disease surveillance. It is based on a critical review of the available evidence of the effectiveness and feasibility of preventative and remedial measures

The ILO Convention 164 requires all ships to carry the **International Medical Guide for Ships 2nd edition (WHO,1988)**, though not all countries ratified this convention. The Guide is currently under revision by WHO with the International Labour Organization and International Maritime Organisation and an update is expected in 2007/08. It is intended to be simple and understandable for use by non-medical personnel and includes algorithms for diagnosis and universal precautions.

Piracy

Some piracy has been reported off the Albanian coast (Fairhurst, 2002).

3.4.2 THE SAFETY OF FERRIES

Worldwide, ferry travel is notoriously unsafe. Ferries are however routinely used in some Mediterranean countries to transport people from airports to their holiday destinations. In 2000, at least 77 lives were lost when a Greek ferry struck a rocky outcrop while its crew were allegedly watching a football match. Following 2 further accidents within a short space of time, one of which also resulted in a lost life, the Greek Government suspended 65 vessels deemed to be unsafe (Tyler R, 2000).

<http://www.wsws.org/articles/2000/oct2000/gre-o02.shtml>

In another recent accident, 1000 lives were lost when an Egyptian ferry sank in February 2006. The accident was blamed on failure to meet basic safety standards – according to reports the 36 year old vessel was no longer licensed to carry passengers under European regulations. Its drains were blocked and after water was used to extinguish a fire on board, it accumulated on board and caused the vessel to capsize. (Kelly R 2006). www.wsws.org/articles/2006/apr2006/ferr-a26.shtml

Prevention and Guidelines

The design, construction operation and safety of ships including passenger ships and passenger ferries come under the International Maritime Organisation (IMO) based in London. The IMO provide various conventions relating to shipping, the main one being Safety of Life at Sea (SOLAS). Individual countries sign up to the convention and then implement the requirements into their national legislation. Each ship has a set of statutory certificates confirming compliance with the various conventions; a passenger ferry for example should carry a Passenger Ship Safety Certificate issued annually following a survey.

There is also an EU directive - Council Directive 1999/35/EC of 29 April 1999 - covering the safety of passenger ferries which requires mandatory surveys for the safe operation of regular ro-ro and high speed passenger craft services.

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3.4.3 FAIRGROUNDS AND AMUSEMENT PARKS

In the UK a report to the Health and Safety Executive (HSE) on fairground safety was commissioned after a spate of fatal accidents on fairground rides in 2000 when 6 deaths occurred in eleven months (Roberts 2001). The report, in spite of finding that high standards of control had not been consistently applied throughout the industry, estimated that the risk of death in a typical session was around one twelfth of that in a typical walk to reach the fairground, and less than one third of the risk of death in a fairground in the 1980s.

Risks are perceived as higher than the statistical reality in part because they often involve children and young people, but also because accidents in the course of family fun are particularly shocking. Also, once passengers are on board a ride they have limited control over the risks (op.cit).

No major accident has occurred in the last few decades, but with the increasing size and sophistication of rides, a major accident if it did occur would potentially cause many fatalities. Speeds may reach 170 km/hr with falls of up to 100m (RPA, 2005)

In the EU there is no legislation covering the safety of fairground and amusement rides per se or to ensure the safe provision of this service to consumers (RPA, 2005). In a comprehensive assessment of best practice for consumer safety in fairgrounds and amusement parks in the EU, commissioned in 2005, amusement parks were defined as fixed sites – including theme parks, amusement parks and water parks, and the term fairgrounds referred to travelling funfairs where rides are set up for a limited time. Obtaining reliable data on accidents was difficult, but the report estimated that in Europe (then 15 countries) approximately 19,000 injuries associated with fairgrounds or amusement parks were sustained each year, half of which were expected to be ride-related. Of these, 59% involved children under 15.

Guidelines and Codes of Practice

The report looked at various regulatory and non-regulatory guidelines and codes of practice in use by Member states, including in particular the UK's *Fairgrounds and amusement parks: guidance for safe practice (HSG175(1) 1997* and Spain's *(UNE 7660: 2001) based on prEN 13814*.

They were assessed for following elements affecting safety:

- technical issues relating to design and installation of equipment;
- operation and use of equipment;
- maintenance and inspections of equipment;
- qualifications and training of personnel;
- guidance, signs and safety information for visitors;
- emergency procedures and equipment.

Areas found to require improvement were staff training and safety information for visitors.

A European standard 'Fairground and amusement park machinery and structures - Safety, Part 1: Design and Manufacture' [CEN 99] makes use of relevant sections of

safety standards EN 1050 and EN 292 on the safe use of machinery. However, the safety of fairground rides increasingly depends on programmable, electronic control systems, and there is a lack of specific guidance on the measures and techniques required for achieving and maintaining the safety of such systems (Ioannides and Worsell 2000).

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3.4.4 ROAD TRAFFIC ACCIDENTS

Health Risks

In some countries the traffic laws may be limited and not adequately enforced, and a variety of traffic made up of both motorised and animal drawn vehicles, two and four wheeled, as well as pedestrians, may share the same space on roads which are poorly constructed, badly maintained and with inadequate lighting and road signs. Local driving habits may be poor (ITH, 2005).

Extent Of The Problem

Road traffic injuries are among the leading causes of death and burden of disease worldwide and are the most frequent cause of death among travellers (Peden, 2004). Studies on behalf of the World Health Organisation and the World Bank have identified that: '*without appropriate action, road-traffic injuries are predicted to escalate from the ninth leading contribution to global burden of disease in 1990 to the third by 2020*' (Ameratunga et al, 2006). Current worldwide estimated figures of 1.2 million killed and 50 million injured are expected to rise by 65% over the next 20 years unless commitment is made to prevention. In the European Region, 127,000 are killed and 2.4 million injured every year and the cost to society is estimated at 2% of a country's gross domestic product (Racciopi et al 2004).

In Greece, where moped accidents involving holidaymakers are a particular problem (Fairhurst, 2002), road accidents increased during the 1990s and there was a 5% increase in resulting deaths, though during the same period the rest of the EU showed no increase in road accidents and a 25% decrease in related deaths (Kechagiadakis, 2004). Other Mediterranean countries, such as Egypt have some of the highest road fatality rates in the world.

The accident statistics in Morocco rank their roads as amongst the most dangerous in the world (Kingdom of Morocco, 2006). In 2004, in 20,496 incidents there were 2818 fatalities, 9,982 people seriously injured and 50,474 lightly injured. One of the objectives in building a motorway to link Marakesh to Agadir, a stretch of road which had 128 fatalities in 2004, was to improve transport safety and reduce accidents from 380 in 2005 to a target 230 in 2010. Another long term outcome is the expected benefit to the development of tourism (op. cit.)

Precautions For The Traveller

Travellers driving in a foreign environment should make sure they are fully conversant with local road-safety regulations, and observe the same safety rules concerning speed, seat belts and crash helmets, that they would follow at home, if local standards are lower (Fairhurst, 2002). Recommendations for remaining safe on foreign roads can be found in *International Travel Health* (www.who.int/ith/en/) or the Association for Safe International Road Travel (www.asirt.org). They include

- take out full insurance for illness and injuries sustained in accidents;
- carry an international driving licence;
- obtain information on local traffic regulations AND informal rules of the road;
- in rental vehicles, check the security of safety features such as seat belts and child seats as well as tyres, tyre pressure, brakes and lights;
- avoid motorcycle or moped driving.

National and local strategies for preventing road traffic injury

The International Road Traffic and Accident Database (IRTAD) has data from 28 of the OECD member countries but only Spain of the Mediterranean coastal countries contributes to this as yet. Statistics refer to hospitalised victims and may come from hospital sources and/or police records. The purpose of the database is to identify road safety problems which will enhance the development of strategies and preventive programmes (www.irtad.net).

In 2001 WHO and partners developed a 5-year strategy for preventing road traffic injury which was implemented in 5 countries worldwide. This is outlined in the report *Preventing road traffic injury: a public health perspective for Europe*, published in 2004, which advocates that road safety should be part of ‘core business’ for the health sector. It aims to integrate road traffic injury prevention into Public Health programmes worldwide, with special emphasis on low and middle income countries.

(www.who.int/violence_injury_prevention/publication/road_traffic/5yearstrat/en/)

The ‘*Road Traffic Injury Prevention Training Manual*’ was published in December 2006 by the Transport Research and Injury Prevention Programme (TRIPP) of the Indian Institute of Technology, and WHO.

(www.who.int/violence_injury_prevention/road_traffic/activities/training_manuals/en/inde)

Greece has implemented a national strategy to improve road safety in response to its own increasing statistics (Kechagiadakis, 2004).

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3.5 GROUP E: PERSONAL SAFETY AND SECURITY

3.5.1 VIOLENCE

Violence has been defined as: '*The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation*' (Krug et al., 2002). Amongst the cost of violence to a nation is the disincentive to investment and tourism, which hampers economic development (WHO, 2002).

Precautions For Travellers

It is important for tourists to be aware of local social and cultural standards of behaviour to avoid giving offence. Ill feeling can be provoked simply by national origin, ethnic grouping, religion, language, gender, cultural emblems or social class if there is local political tension.

Violence presents a significant risk in many developing countries and tourists may be targeted by criminals (ITH, 2005).

According to '*International Travel and Health*', travellers are more likely to be killed in accidents or through violence than to be struck down by an exotic infectious disease. (WHO, 2005, Ch.4).

Risks can be reduced if travellers are aware of dangers and take appropriate precautions including:

- be alert to muggings during the day as well as the night;
- keep jewellery, cameras and other items of value out of sight and do not carry large sums of money on your person;
- avoid isolated beaches and other remote areas;
- avoid overcrowded trains, buses and minibus taxis;
- use taxis from authorized ranks only;
- avoid driving at night and never travel alone;
- keep car doors locked and windows shut;
- be particularly alert when waiting at traffic lights;
- park in well-lit areas and do not pick up strangers.

National standards and guidelines

Under the recommended measures for tourism safety approved by resolution A/RES/284(IX) of the General Assembly of the World Tourism Organization at its ninth session (1991), every state is responsible for assessing the threat to the life and health, property and economic interests of its tourist, and for developing a national

policy on tourism safety to prevent those risks (www.unwto.org/quality/safety/en/safety).

Safety standards and practices for tourist facilities and sites should be adopted and monitored, and should cover:

- fire protection;
- food safety;
- sanitary and health requirements;
- environmental safeguards.

The measures also require that:

- guidelines are developed for operators of tourist facilities in the event of unlawful interference;
- adequate law enforcement is provided;
- appropriate documentation and information on tourism safety is provided to tourists, to include:
 - basic safety regulations;
 - good practice for security at transport points such as airports, bus and train stations etc;
 - warnings of possible threats at tourist sites and facilities;
 - possible health hazards and means of self-protection;
 - services available to tourists when assistance is required.
- staff of tourism establishments and tourism-oriented services are adequately trained in tourism safety;
- liability rules are developed in tourism establishments and information concerning them is readily available to tourists and their representatives;
- national policies and services are developed with regard to tourist health, including systems to report on health problems.

3.5.2 NIGHTLIFE AND PUBLIC ORDER

Larger tourist resorts compete to provide the sort of nightlife holiday makers are looking for, including bars, night clubs and discotheques where they can relax, socialise and meet new people. Local benefits include employment, investment and regeneration but the downside of night time entertainment are the many health and social problems which can occur, associated with high alcohol consumption and drug use, for example anti-social behaviour, violence, accidents and risky sexual behaviour.

Safe Management of Crowds

Large crowds are a normal part of the operation of many tourist resorts and facilities. Large public venues include railway stations, airports, town squares, fairgrounds, leisure centres and sports stadiums. Large public functions include street parades, pop concerts and festivals. Excessive crowding and poor crowd management can lead at worst to crushing injury and even death, and at the very least to such anxiety and stress that visitors decide not to come again or to recommend a visit to others. In addition to personal suffering, the accompanying adverse publicity, loss of revenue, compensation payments, insurance costs and possible prosecution can have a long-

term effect on a company's viability. The layout of the venue, design of traffic circulation routes, and the design and location of the facilities can have a fundamental effect on crowd behaviour. Clear signposts and simple, audible, public address messages in relevant languages are vital. Poor communication can lead to people stopping, moving against the flow of the crowd, blocking passages or making frequent demands on staff for directions.

Visitors without adequate information, or given contradictory information, can become frustrated and aggressive. Physical features of a venue that may lead to overcrowding and possible injury include steep slopes, closed or blocked off ends of the site, locked gates, convergence of several routes into one, and uneven or slippery flooring or steps. Other potential hazards include reverse or cross flows of people in a dense crowd, flows which are obstructed by queues or gathering crowds, large pedestrian flows mixing with animals or traffic, and moving attractions within a crowd (Philipp and Hodgkinson, 1994).

3.5.3 CONFLICT ZONES

Several countries in the Mediterranean region have experienced conflict during the last few decades. The negative effect on tourism goes beyond the immediate danger of being caught up in hostilities, as damage to the local infrastructure may be long lasting. For example, the civil war in Lebanon from 1975 to 1992 had a significant negative impact on the **public health care** system.

It has been suggested that war zones may have increased environmental health factors including depleted uranium and other radioactive metals which could lead to an increase in cancer incidence. Although epidemiological evidence is not available at present to support this suggestion (Davey, 2001), the issue may be relevant in the future for Mediterranean countries.

At the 3rd European Conference on Travel Medicine, Croatia was anxious to show that there was no greater risk to tourists here than in any other Mediterranean country, reporting that by 2000 the epidemiology of weapon and explosive device injuries had returned to its pre-war state.

Extent of the problem

Homicide rates amongst young males are high in the countries of the Southern Mediterranean coast (World report map).

Precautions For Tourists To Help Prevent Violence Occurring

The ITH lists a number of precautions which travellers can take to minimise the risk of violence (IHT list p 45) and further information on violence and injury prevention can be found on www.who.int/violence_injury_prevention/en

The publication '*World Report on Violence and Health: Summary (WHO, 2002)*' aimed to raise awareness of problems of violence globally, making the case that it is preventable and the Public Health has a crucial role to play in addressing its causes and consequences (www.who.int/violence_injury_prevention/en)

The report recommends:

- greater priority being given to primary prevention of violence;

- the involvement of many different sectors and agencies in prevention programmes with integral evaluation.

In 2001, the WHO set up a dedicated emergency and humanitarian action unit in Cairo, Egypt, to provide technical and public health expertise and material support to the 22 Ministries of Health in the Eastern Mediterranean region, sister UN agencies, the Red Crescent and Red Cross societies, and other non-governmental and academic partners; the scale and effect of conflict and other disasters in the Eastern Mediterranean region are however still thought likely to increase (Musani and Shaikh, 2006). One reason for the current situation, at least in parts of the Mediterranean is considered to be '*the international community's focus on the palliative effect of aid rather than the promotion of human security and human development concerns ... one way ahead is to adopt a population based approach that concentrates on equity and the social, political and economic determinants of health*' (Hill et al, 2006). Accordingly, other strategies for humanitarian support are being applied such as those developed by the Italian Red Cross [www.choleracafe.org]

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3.5.4 TERRORISM – BIOLOGICAL, CHEMICAL, AND RADIOACTIVE HAZARDS

Conflict within states rather than between nations has been a feature of the last few decades and this has increasingly involved the use of acts of terrorism aimed at civilians in order to attract public attention to a cause. Travellers or tourist groups are a relatively easy and common target for such attacks since crowded locations provide large numbers of victims from many countries, and the economic impact will affect the tourist trade as well as local infrastructure. The attack on tourists in Egypt is a recent example in the Mediterranean (Ostroff, 2002).

Bioterrorism.

New threats emerging involve chemical and biological weapons, and although the risk to the average traveller is relatively low, consequences of such an attack would be high. Systems used by travellers, for example airports or subways, provide an opportunity for maximum dispersal of transmissible agents such as smallpox with an

incubation period during which they are undetectable. Other diseases of concern are: anthrax, botulism, tularaemia, plague, viral hemorrhagic fevers and nerve gases.

Action needed

Developed countries are inexperienced in dealing with these presentations. Public health systems need to be adequately prepared to respond, including ensuring prompt recognition and diagnosis by front line clinicians; producing / stockpiling appropriate vaccines and medications; containment strategies. For example, in the USA the Centre for Disease Control (CDC) has produced large quantities of smallpox vaccine and developed a smallpox preparedness programme to ensure that :

- State and local health department personnel are given the necessary information to
 - plan and establish Public Health and healthcare response teams;
 - set up smallpox vaccination delivery, administration and follow-up.
- information on evaluation and treatment is provided for vaccine clinic personnel and clinicians;
- information is given to hospital administration and hospital clinicians to inform decisions about programme participation and possible vaccination sequelae;
- basic information is provided to primary care physicians on evaluation of possible cases, screening issues and referral of adverse reactions
(www2.cdc.gov/phtn/smallpox.asp).

The feasibility of a Global Tourism Disaster Communication Network has been explored in response to incidents involving high explosives and the fear that terrorists might detonate a radiological (dirty) bomb or nuclear device, or use chemical or biological agents (World Economic Forum, 2005).

Prevention

It is hard to prevent terrorist attacks by individuals or small groups so the best defence is preparation. Response to a chemical attack requires planning, equipment and training to deal with large numbers of people requiring decontamination and hospitalisation. International consensus on the most likely chemical threats are that these would be nerve agents, blister agents, choking agents or cyanides (Ryan, 2002).

Devices exist which can detect some chemicals in the air but this method would not be practical for the many possible biological agents. Response planning involves protocols for controlling an epidemic, stockpiling of vaccines or antibiotics and a good surveillance system for early detection. Specialist training in epidemiology and presentation of likely agents is needed, and a system should be in place with clinics/hospitals and other relevant services for managing an outbreak and notifying and cooperating with public health and government agencies.

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3.6 GROUP F: PRINCIPAL COMMUNICABLE DISEASES

The risk of exposure to infectious diseases depends on the presence of infectious agents in the area to be visited, but increasing global air travel has accelerated the international exchange of pathogens (Rey, 2002). Any destination can be reached within 36 hours which is well within the incubation period for most communicable diseases so travellers can become vehicles or victims. Many diseases have been spread outside their endemic areas by travellers (DCD, 2004).

Information about the risks of communicable diseases is available from WHO's annually updated publication *International Travel and Health* (www.who.int/ith/en) but incidence and mortality statistics are largely lacking or limited to specific outbreaks of emerging diseases (DCD, 2004).

Trans-national travel and commerce are recognised as a major factor associated with emerging infectious diseases. Outbreaks such as SARS and Avian Flu (see section x below) highlight the need for rigorous global systems to monitor travellers' health and for prompt recognition of travel-related outbreaks (Ostroff, 2004).

WHO has developed an international network for the early detection of disease outbreaks, including biosafety and deliberate epidemics, and rapid response to control them. The WHO global influenza preparedness plan At the WHO / CSR office in Lyon core competencies are being developed for use by national public health laboratories and epidemiology units for the detection of and response to epidemics and emerging infections. There is still a lot of work needing to be done to strengthen some countries' capacities for disease surveillance, early warning and rapid response (www.who.int/csr/en).

3.6.1 FOODBORNE-DISEASES

Food and water-borne diseases are transmitted by consumption of contaminated food and drink. Risk of infection can be reduced by hygienic precautions and avoiding polluted recreational water (q.v. Section 3.1.4).

Salmonellosis is present in all the Mediterranean countries. It originates in animals so contamination of food from animal sources can occur during slaughter, transportation, storage or preparation. Cross contamination with raw products may also occur. Preventive and control measures include decontamination of food and wastes, hygienic measures and sanitary education.

Noroviruses are RNA viruses belonging to the family Caliciviridae which cause gastro-enteritis, with projectile vomiting. All ages are susceptible and although the disease is not serious, it has a low infectious dose and is highly transmissible, making it the most common cause of gastroenteritis in the community. Outbreaks are particularly associated with semi-closed settings such as hospitals, nursing homes,

cruise ships or hotels. The research and surveillance group European Foodborne Viruses Network predicted that 2006/07 would be a highly active norovirus season with new variants of genotype G II 4 2006 being predominant (www.eurosurveillance.org/ew/2006/061214.asp). Practical issues for hotels, holiday camps and cruise ships include the:

- ability to recognise cases;
- management of infected guests;
- availability of equipment and staff needed to deal with outbreaks;
- screening of guests on arrival / before embarkation;
- exclusion criteria for guests / passengers;
- efficient decontamination and deep cleansing methods.

Travellers' Diarrhoea (TD) is the most common health problem for travellers, affecting an estimated 18 million travellers per year (Bergquist, 2002). It is associated with contaminated food or water and symptoms of diarrhoea may be accompanied by nausea, vomiting and fever. Although it is rarely life threatening it can last for up to 3 days, severely disrupting holiday plans and enjoyment. 20-30% cases are confined to bed and 40% have to change their travel schedule (op.cit.). It can be caused by a wide range of infectious agents (ITH, 2005) including bacteria, viruses and some parasitic and fungal infections. A registered and approved vaccine is available which gives protection against ETEC, thought to be the single most common cause of TD. (Bergquist, 2002).

Although the acute infection in TD normally resolves, up to 30% of people may develop long term digestive symptoms such as diarrhoea, abdominal pain and bloating, fulfilling the criteria for Irritable Bowel Syndrome (IBS). Risk factors for this include female sex, younger age, duration of acute stage > 2 wks, use of antibiotics, type of pathogen (Campylobacter = Shigella > Salmonella) and concomitant psychosocial difficulties.

Biological toxins found in seafood also cause illness and include: paralytic shellfish; neurotoxic shellfish; amnesic shellfish; ciguatera toxin; scombroid fish; puffer fish.

Food and drink may also be contaminated by poisonous chemicals but since ill-effects in these cases are usually the result of long-term exposure, they are not a significant risk for travellers.

Typhoid fever is caused by the typhoid bacillus *Salmonella typhi* which infects only humans (ITH, 2005). Transmission is through the consumption of contaminated food or water, possible sources being shellfish from sewage-polluted beds, raw fruit or vegetables fertilised with human waste, or milk or milk produces contaminated by handlers. Flies may also transfer infection to foods. Pollution of a water source may potentially cause an epidemic.

The disease varies in severity with symptoms of fever, headache, malaise, anorexia and insomnia, which without treatment progress to sustained fever, bradycardia, hepatosplenomegaly, abdominal symptoms and sometime pneumonia. Untreated cases may develop additional complications which may prove fatal but a case-fatality rate of 10% can be reduced to less than 1% with antibiotics. 2-5% of persons

contracting typhoid fever become carriers. Paratyphoid fever shows similar symptoms but is milder with a much lower fatality rate.

The risk to travellers is low in the Mediterranean, except possibly in North Africa, except where exposed to low standards of hygiene in food handling, drinking water and sanitation.

Prevention of Food-Borne Disease

The safety of food and drink depends on the standards of hygiene in their preparation and handling. The risk is therefore greatest in countries with low standards of hygiene and sanitation and poor control over these.

The Federation of Tour Operators in the UK have sought to encourage destination countries to develop and implement food hygiene programmes to improve the safety of the food supply but this mainly affects hotel accommodation. The Food and Agriculture Organisation of the UN (FAO) recognises that street vendors have a significant role in food safety and has been supporting a range of activities to strengthen this sector and improve safety since 1989. They have collaborated with municipal authorities to improve the quality of the raw and processed foods used by the vendors, and sought to strengthen the food quality capabilities of both national authorities and the private sector. (Arfi and Hopper, 2004). Effective action for adequate control of food and water borne illnesses needs:

- good public health surveillance systems with linked laboratory bacterial and viral monitoring programmes for exposures involving food and drink;
- close cooperation of public and environmental health officials, tour operators, hoteliers, restaurant owners and operators, and support of the Federation of Tour Operators and the International Tourism Organisation;
- awareness and understanding of the implications to economic well-being of the local population from insufficient or poorly managed water treatment and sewage treatment plants – the long term benefits can be considerable, both in the numbers of tourist visitors choosing to return to a locality and the health of the local population;
- in the event of an outbreak of suspected food or drink poisoning ready access to environmental epidemiology field support staff;
- ready access to experienced microbiologists and public health specialists who can jointly assess the likely routes of infection, drinking water supplies to hotels, restaurants and the local population, the sewage disposal and solid wastes disposal systems for these populations, known gastro intestinal illnesses in the local population, living arrangements and health care facilities of hotel and restaurant staff, and the adequacy of food hygiene training available for hotel and restaurant staff.

Travellers should take precautions, avoiding consumption of potentially contaminated food or drink, avoiding contact with potentially contaminated recreational water, and consider carrying medication to treat diarrhoea as well as oral rehydration salts and water-disinfecting agents.

To avoid unsafe food or drink they should:

- eat only food which has been cooked thoroughly and is still hot;

- avoid uncooked food, apart from fruit and vegetables that can be peeled or shelled;
- avoid dishes containing raw or undercooked eggs;
- avoid food bought from street vendors;
- avoid ice cream from unreliable vendors;
- where biotoxins could be present in fish or shellfish, obtain advice locally;
- boil unpasteurized milk.

There is also a risk of infection from polluted recreational water.

3.6.2 VECTOR-BORNE DISEASES

These diseases are transmitted by insects or other vectors such as ticks. The most significant diseases in this category are malaria and yellow fever. Yellow fever is not endemic in the Mediterranean area; the southern and eastern Mediterranean countries require incoming visitors from infected areas to be vaccinated. There is a very limited risk of malaria during the summer months in some areas of Algeria, Egypt, Morocco, Syria and Turkey, none of which have had indigenous cases in recent years. (www.who.int/ith/countries/en/index.html). Risk can be reduced by taking precautions to avoid insect bites.

3.6.3 ZOONOSES

Zoonoses are diseases transmitted from animals. Examples include Rabies, brucellosis, leptospirosis and certain viral haemorrhagic fevers. Infection can be transmitted through bites, through contact with contaminated body fluids or faeces of animals or by consuming foods of animal origin such as meat or milk products. Risk can be reduced by avoiding close contact with animals in areas where infection is likely to be present. Children should be prevented from approaching or handling animals.

Prevention and control of zoonoses involves various sectors, including agriculture, public health, trade, food industry and communities. Success in controlling them depends on the efficiency of the surveillance system and the coordinated actions of the different sectors involved. (DCD 2004).

Rabies is the most important infectious disease from animal bites, the virus being present in the saliva of a range of domestic and wild animals. In developing countries transmission is most usually from dogs. It causes an acute viral encephalomyelitis, which is invariably fatal. Initial symptoms are headache, fever and malaise. Excitability, hallucinations, aerophobia or fear of water may follow, progressing to delirium, convulsions and death after a few days.

Vaccination is available to those travelling to rabies endemic areas. The disease has been eradicated in terrestrial animals in most countries of Western Europe by a programme of immunisation of the wild fauna (Rotivel, Goudal and de Fanti, 2002) though even in these countries it is still present in bats and occasionally occurs in illegally imported animals. It is still endemic in Eastern and Southern Mediterranean areas (www.who.int/rabies/epidemiology/en/). Sporadic cases in pets, wild animals and humans occur elsewhere in the Mediterranean; during the years 2001-2006, WHO data for cases, excluding those in bats, identified for example, 996 cases in Turkey, 17 cases in Spain and 5 cases in France, but none in Cyprus, Greece, Italy, Malta and

Portugal (Elliot, 2007). The comprehensiveness of reporting systems is however not known. Accordingly, to help ensure human health and the possible need for immunisation programmes, close monitoring and reliable data for time trends of the incidence of animal rabies is needed.

Rabies is a totally preventable disease but there is no effective treatment once the symptoms of encephalitis appear. Travel clinics should advise on vaccination when appropriate.

Guidelines for post-exposure treatment of rabies can be found in International Travel and Health, p66 (www.who.int/ith/en/).

Brucellosis is caused by several species of *Brucella* bacteria. It is primarily an animal disease and can be transferred to humans by contact with an infected animal or consumption of unpasteurized milk or cheese. Symptoms include generalized infection causing continuous or intermittent fever or malaise which may last for months.

Brucellosis is found worldwide and is most common in developing countries and in the Mediterranean. The risk for travellers is low if direct contact with farm animals and the consumption of unpasteurized milk products are avoided.

Leptospirosis, which includes Weil's disease, is caused by various spirochaetes of the genus *Leptospira*. Infection occurs through contact between the skin or mucous membranes and water or wet vegetation contaminated with the urine of infected animals, most notably rats.

A range of symptoms may include sudden onset of fever, headache, myalgia, chills and skin rash and the disease may progress to meningitis, haemolytic anaemia, jaundice, haemorrhagic manifestations or other complications including hepatorenal failure.

Leptospirosis is found world wide, particularly in the tropics. No prophylaxis is recommended as the risk to travellers is low. Precautions include avoiding swimming in potentially contaminated water such as canals, ponds or rivers, and avoiding contact with rodents (ITH, 2005).

Campylobacteriosis is an infectious disease caused by bacteria of the genus *Campylobacter*. Symptoms of diarrhoea, cramping, abdominal pain and fever occur within 2 to 5 days of exposure and last typically for a week, though some people have no symptoms and in a person with a compromised immune system, the infection could spread to the bloodstream and become life-threatening. In 2005, campylobacteriosis overtook salmonellosis as the most reported zoonotic disease in humans in the EU (http://ec.europa.eu/dgs/health_consumer/foodsafety_en.htm).

3.6.4 SEXUALLY TRANSMITTED DISEASES

These are diseases passed between people through unsafe sexual practice. Examples are hepatitis B, HIV/AIDS and syphilis, all of which can be contracted during unprotected sexual intercourse with an infected person. These three diseases may also be transmitted in contaminated blood or blood products, by contaminated syringes and

injection needles and, potentially, by unsterilized instruments which pierce the skin in procedures such as acupuncture, body piercing or tattooing.

Sexually transmitted diseases are a major cause of acute illness, infertility, long-term disability and death, with severe medical and psychological consequences for millions of men, women and children (ITH, 2005).

Tourists have an increased risk of contracting a sexual disease if their holiday behaviour includes having sexual intercourse with casual partners. Risk of infection is reduced by avoiding casual sex, and by the use of condoms. There is a vaccination against hepatitis B. Although tourists often engage in risky behaviour with other tourists, the possibility of contracting infection from local persons or of passing it on to them also needs to be considered. For example, among 1387 students responding to a questionnaire survey in the provinces of Erzurum and Istanbul in Turkey, although 94.5% believed AIDS is an important problem for Turkish society, 54.4% considered there was no risk for them in the future; it was concluded that more consideration needs to be given to effective health education methods (Turhan et al, 2006). One estimate of the risk of infection with AIDS is 0.1 to 1% per sexual intercourse, but this can be increased in case of intercurrent sexually transmitted disease, especially if genital ulceration is present (Caumes, 2002).

Hepatitis A is a virus acquired by the faecal-oral route, or by close contact, or by consumption of contaminated food or drinking water. It causes fever, malaise and abdominal discomfort, followed by the development of jaundice after a few days. In children it may be mild or asymptomatic but in adults, illness is more severe and recovery may take several months. Fatality is greater than 2% for those over 40 and 4% for those over 60.

Vaccines are available and care should be taken to avoid potentially contaminated food and water.

There is a medium to high risk of both hepatitis A and B in all the countries bordering the eastern and southern shores of the Mediterranean (ITH, 2005). In the summer of 2004, 350 holiday makers from 9 European countries were infected with hepatitis A while staying in one hotel in an Egyptian resort. Orange juice was identified as the most likely source of infection

(www.cdc.gov/mill1.sjlibrary.org/ncidod/EID/13/1/pdfs/156.pdf).

HAV and HBV are recommended in Albania, Egypt, Israel, Lebanon, Libya, Morocco, Syria, Tunisia and Turkey.

3.6.5 BLOODBORNE DISEASES

Bloodborne diseases are transmitted by direct contact with infected blood or other body fluids. Examples are hepatitis B, HIV/AIDS and malaria and hepatitis C, which has a medium to high prevalence in the southern countries bordering the Mediterranean.

Risk is reduced by avoiding direct contact with blood and body fluids, avoiding transfusion with unsafe blood and avoiding the use of potentially contaminated

needles and syringes or any medical or cosmetic procedure which involves piercing the skin (including acupuncture, piercing and tattooing).

Accidental exposure to potentially infected blood or other body fluids is a medical emergency. Details of treatment can be found on page 58 of ITH, 2005.

3.6.6 AIRBORNE DISEASES

Airborne diseases are transmitted by aerosol and droplets from the nose and mouth. Examples include influenza, meningococcal disease and tuberculosis. The risk of infection can be reduced by avoiding close contact with people in crowded and enclosed spaces.

Tuberculosis (TB) can develop after infection with the tubercle bacillus *Mycobacterium tuberculosis*, which is normally transmitted person to person. There is only a 5-10% lifetime risk that the disease will develop following infection, though this is increased by certain factors, for example immunosuppression.

Tuberculosis is still found in Egypt, Lebanon, Syria and Tunisia but the risk for travellers is low if close contact with known TB patients is avoided.

Meningococcal Disease can follow infection with the bacterium *Neisseria meningitidis*, which is transmitted from person to person. Many people remain asymptomatic, though they are then carriers and may infect others. Susceptibility to meningococcal disease decreases with age, apart from a slightly raised risk in adolescence. If meningococcal meningitis does develop, symptoms are sudden onset of intense headache, fever, nausea, vomiting, photophobia, a stiff neck and various neurological signs. It is fatal in 5-10% of cases, even with prompt medical care. Up to 20% of survivors may have permanent neurological sequelae (ITH, 2005). Meningococcal septicaemia, in which bacteria are rapidly disseminated in the blood stream, is less common but has a high fatality rate.

Recent outbreaks of meningococcal meningitis have occurred in Lebanon and Morocco. Risk to travellers is generally low if crowded conditions are avoided, particularly for young people (ITH, 2005).

Newly Emerging Diseases In This Category

SARS In 2003 the outbreak of a new and severe acute respiratory syndrome (SARS) of unknown origin, which was spreading rapidly along the routes of international air travel, provided evidence of the efficacy of the WHO framework for co-ordinated global response, making use of electronically interlinked networks of experts. The Global Public Health Intelligence Network (GPHIN), developed and maintained by Health Canada was set up to expedite outbreak detection, systematically gathering real-time disease intelligence while the WHO Global Outbreak Alert and Response Network (GOARN) dealt with global alert and support operations. A strike force of specialized staff and technical expertise was on stand by for emergency investigations and on-the-spot assistance. New procedures for outbreak verification and protocols for all phases of response were developed and tested under emergency conditions. The outbreak of SARS was contained within four months (Rodier, 2004).

Avian flu, caused by the influenza virus H5N1, a sub type with pandemic potential, emerged in poultry flocks in Asia in 2003. It has since been repeatedly transmitted to humans causing many fatalities, but to date there has been no recorded human to human infection

The illness has been identified in Mediterranean countries. For example, a death from avian flu occurred in Egypt on 19th January 2007, the 11th fatality out of 19 cases in the country (www.who.int/csr/don/2007_01_22a/en/index.html). There is however some doubt about the reliability of these data as on 17 February, 2007, it was reported that 22 cases had been identified in Egypt amongst whom there had been 13 deaths (Reuters, 2007).

WHO global Influenza preparedness plan was developed in 2005 replacing the earlier influenza pandemic guidelines (1999). It is a guide to inform and harmonize national and international preparedness and response before and during influenza pandemics and is primarily for public health professionals with responsibility in this area.

3.6.7 SOIL TRANSMITTED DISEASES

These include diseases where dormant spores of infectious agents enter the body through broken skin, including minor cuts and scratches. Examples include **anthrax** and **tetanus**. The risk of infection can be reduced by protecting the skin from direct contact with soil in areas where soil-transmitted infections are likely to be present.

Some intestinal parasitic infections such as **ascariasis** and **trichuriasis** are transmitted via soil and infection may follow the consumption of soil-contaminated vegetables. Risks are low for travellers in the Mediterranean region.

Polio is a highly contagious disease caused by a virus that invades the nervous system and can cause paralysis within hours. It mainly attacks children under five, and although there is no cure, it can be prevented by a vaccine which provides lifetime protection.

Europe was declared polio-free in 2002. Significant progress has been made in EMR towards eradication of polio (from www.phac-aspc.gc.ca/tmp-pmv/info/polio_e.html)

The last confirmed case of polio in Egypt was in 2004 and it has now been declared a polio-free country. <http://www.emro.who.int/polio/>

3.6.8 OTHER IMPORTANT DISEASES SPREAD BY FOOD, DRINK AND POOR HYGIENE

Cryptosporidiosis is an infection caused by the parasites *Cryptosporidium hominis* and *C. parvum* which causes diarrhoea, stomach pains and sometimes vomiting for a period of 1-2 weeks. Infection is by the oral-faecal route; some infected persons have no symptoms but can pass on the infection to others. Children are particularly susceptible.

The parasite is widespread in all countries and infects both humans and some animals, such as cattle and sheep. Infection is spread through close contact with an infected

person or animal, or through the ingestion of contaminated drinking water or swimming pool water. There have also been cases associated with fresh apple juice, chicken salad, improperly pasteurized milk and infected food handlers.

In the past few years, several outbreaks associated with hotel swimming pools have resulted in negative publicity and expensive insurance and legal claims being brought against hoteliers and tour operators. Under the 1990 EC Directive (90/314/EC) all European tour operators are liable to the tourist for all aspects of the package holiday, including those supplied by another party such as the hotelier.

Cryptosporidium can protect itself from the normal levels of chlorine used to disinfect hotel swimming pools by adopting a resistant form known as an oocyst, which causes infection if swallowed. Raising the chlorine to a high level and undertaking a complex system of filtering will eradicate oocysts, but requires a high level of pool maintenance. Because of an incubation period of between 2 and 10 days, guest may sometimes have left the hotel before the illness develops.

Basic prevention methods for tourist establishments with swimming pools, hydro massage baths or similar facilities include:

- water treatment plant for childrens' pools independent of that of the adult pool;
- showers to be provided in the pool area, with drainage discharged to waste;
- continuous filtration and circulation of water;
- technical inspection of filters at least once a year;
- backwashing of filters at least once a week;
- flow meters to control backwashing and filtration rates.
- adequate use of flocculants in installations with sand filters;
- water pH to be maintained within the limits recommended for the specific flocculant used.

Regulations which pool users are requested to observe include:

- showering before using the pool;
- washing hands after using the lavatory or changing a nappy;
- washing children well before they go in the pool, particularly in the anal area;
- not allowing infants to swim in nappies – those who are incontinent should wear a waterproof swimming suit;
- readily-available written advice at the poolside about not swimming there if there is any risk of faecal incontinence.

All personnel involved in pool maintenance should receive appropriate accredited training and management and other personnel should have sufficient knowledge of the dangers involved, prevention methods, relevant legislation and the establishment's responsibilities.

The Federation of Tour Operators (FTO) have produced an action plan to assist tourist establishments and tour operators in the event of an outbreak (www.fto.co.uk/assets/documents/fto_cryptosporidium%20Global%20v2.pdf)

Giardiasis is caused by the parasite *Giardia lamblia* whose cysts may be ingested from drinking or recreational water contaminated by the faeces of infected humans or animals. Infections may be asymptomatic or cause intestinal symptoms such as chronic diarrhoea, abdominal cramps, bloating, fatigue and weight loss.

There is a significant risk for travellers if they use recreational water used by wildlife, or unfiltered water in swimming pools (ITH, 2005).

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3.7 **GROUP G: TRAVEL IMMUNISATIONS AND CHEMOPROPHYLAXIS**

Risks to health

In their home environment people live in equilibrium with locally occurring strains of microorganisms and climatic conditions and international travel upsets this balance. It is also influenced by characteristics of the traveller, for example age, sex and health status, and by environmental factors at destination (WHO, 2005). More elderly people are now likely to travel, often with pre-existing health problems, and infants and young children, who have additional sensitivities and susceptibilities also need 'special attention' (op.cit.). Immunization against infectious diseases is mostly non-mandatory but may sometimes be an advisable precaution.

Prevention

All tourists should be encouraged to take responsibility for their health when abroad, as far as is possible. They should be advised to visit a travel medicine clinic or website (e.g. www.travellers-health.info ; www.prnewswire.co.uk ; www.nathnac.org) before their journey to determine whether vaccinations are necessary for travel to their destination. Several publications are available, for example *Travellers Health. How to stay healthy abroad*. R. Dawood (ed), 4th edition 2002 OUP. The WHO's own publication (available on its website at www.who.int/ith/en/) *International Travel and Health 2000* is updated each year (printed every second) and although aimed primarily at medical and public health professionals giving health advice, is also for others working in the field, e.g. travel agents, airline companies etc and written in a way that is easily accessible for travellers themselves.

Those with pre-existing chronic illnesses should ensure that all necessary medication is carried in hand luggage with details of the condition, treatment and medication and name and contact details of their physician. It may be advisable to have a physician's letter certifying the need to carry drugs and items such as syringes, for customs.

Tourists should also have up to date information about reciprocal health care agreements between resident country and destination and take out health insurance where appropriate. Travel agents should advise on this and some countries require it. Needs and requirements can alter at short notice. Being adequately informed lessens the likelihood of developing travel related stress (Jonovska et al., 2004).

Travel Industry professionals (tour operators, travel agents, shipping and airline companies) have a responsibility to safeguard the health of their clients and ensure that they have the latest information but this is not formalised in European legislation. (cross ref to safety standards for accommodation section)

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4 INTERNATIONAL HEALTH REGULATIONS

Overview

The **International Health Regulations** (www.who.int/csr/ihr/current/en/), which replaced the WHO's early International Sanitary Regulations, were developed and adopted in 1969 to ensure maximum security against the international spread of diseases, through permanent public health measures. The original version was intended to monitor and control six serious infectious diseases: cholera, plague, yellow fever, smallpox, relapsing fever and typhus, only the first three of which were notifiable.

In the 1990s, as increasing international travel led to new challenges in the control of emerging and re-emerging infectious diseases, advances in communication technology facilitated the rapid sharing of information. In 1994 the World Health Assembly called upon the WHO to support its Member States in identifying, verifying and responding to public health emergencies of international concern. The regulations were revised by the WHO Member States and the new regulations were adopted by the World Health Assembly in May 2005. IHR (2005) come into force on 15 June 2007.

The purpose and scope of the IHR (2005) are to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade. The IHR (2005) also establish a single code of procedures and practices for routine public health measures at international airports and ports and some ground crossings.

The IHR (2005) establish a legal framework for the rapid gathering of information about potential public health emergencies of international concern. They include the following changes:

Notification. States are required to notify WHO of all events that may constitute a public health emergency of international concern and to respond to requests for verification of information regarding such events. This will enable WHO to ensure appropriate technical collaboration for effective protection of such emergencies and, under certain defined circumstances, inform other States of the public health risks that merit action on their part.

National IHR Focal Points and WHO IHR Contact Points. The establishment of National IHR Focal Points and corresponding contact persons or officials is required. National IHR Focal Points ensure the operational link between States and the WHO on IHR matters. National IHR Focal Points provide to and receive information from WHO on a 24 hour a day basis, seven days a week. Furthermore, under the IHR(2005), WHO is required to inform States of its IHR Contact Points at the headquarters or regional level.

Definition of core capacities.

The IHR(2005) set out the basic public health capacities a State must develop, strengthen and maintain at the primary, intermediate and national levels in order to detect, report and respond to public health risks and potential public health emergencies of international concern. In addition, specific capacities are required for the implementation of measures at certain international airports, ports and ground crossings.

Recommended measures

WHO's response to a public health event may include recommended measures for application by the State affected by a public health emergency of international concern, by other States and by operators of international transport.

Temporary recommendations are made by WHO on an ad hoc, time-limited, risk-specific basis, as a result of a public health emergency of international concern.

Standing recommendations indicate the appropriate measures for routine application for specific ongoing public health risks at certain international airports, ports and ground crossings and are for routine or periodic application.

Measures could be directed towards persons, baggage, cargo, containers, ships, aircraft, road vehicles, goods or postal parcels.

5 STRUCTURED FRAMEWORKS FOR ASSESSING AND PRIORITISING HEALTH RISKS ASSOCIATED WITH HAZARDS IN THE MEDITERANEAN

General Points:

This report was requested by the WHO Coordinating Unit for the Mediterranean Pollution Action Plan. It is intended as a framework for further discussion among Scientists, Environmental Health Officers, Local Government Enforcement Officers, planners, politicians, tour and travel operators, and other interested and involved professionals. It is being used to help identify steps needed to implement appropriate actions and areas for further studies, focused on problems identified for tourist establishments in different localities around the Mediterranean coast. Points arising from this report include:

- Is sufficient known in the Mediterranean about the health risks for tourists and residents?
- What gaps in the present-day understanding of the health risks exist, and do these gaps exist uniformly throughout the Mediterranean?
- Are the data collection systems, protection and control measures in place sufficient to protect the health of tourists and residents?
- What surveillance systems are in place or need to be developed and who needs to know and act on the findings?
- Are new educational and training materials needed and if so for whom, how can they be developed, who will provide the education and training and how can its standards and quality control be ensured and audited?

As the WHO Health for All programme has noted, these such questions require an intersectoral approach. It is a challenge. Nevertheless, the need for an ecological perspective and strategic approach to it is increasingly recognised and for which the: *'health-determining role for the environment acting through broader psychosocial mechanisms'* has to be addressed (Morris et al., 2006). For example, from Beirut it has been reported that: *'Health indicators in the Arab world show stark differences between individual countries' and that 'aggregate figures provide only a narrow perspective. They do not show variation according to socioeconomic group, sex, education, or political affiliation'* and there is concern that as a consequence it is not yet possible for *'rigorous intersectoral research of relevance for health in the region'* (Makhoul and El-Barbir, 2006). Suggested models for an intersectoral approach and for local use are therefore included here in this report.

The models given below endorse the WHO Healthy Settings approach. In this approach, *'the high protective effects of high levels of social capital are found in communities where there are high levels of trust, participation in civic life and social support'* (Abbott, 2002; Philipp and Dodwell, 2005). They support collective efforts

in society for ‘*cultural well-being*’ and the strengthening of ‘*cultural capital*’ and ‘*social capital*’ and for which frameworks have been published (Eames, 2006). It has after all, been noted that: “*Feeling comfortable in your own culture is essential for a healthy lifestyle and general well-being*” (Eames, 2003). Economists have found that ‘*social capital*’ correlates closely with subjective well-being and define it as: “*the ties that bind families, neighbourhoods, workplaces, communities and religious groups together*” (Delamothe, 2005).

The United Nations Education, Scientific and Cultural Organisation (UNESCO) has defined ‘*culture*’ as: “*the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs*” (Eames, 2003); in support of this, ‘*cultural capital*’ has been defined as: “*the wealth created through celebrating and investing in cultural histories, values, ideologies, rituals and programmes*’ (Eames, 2006).

Modelling Local Approaches To Health Risks Assessment And Sustainable Development Of Tourist Resorts And Establishments:

For the sustainable development of tourist health, clarification is needed of the specific areas needing most to be addressed. For this, models of approach are needed. For example, the Fourth WHO Regional Office for Europe Ministerial Conference on Environment and Health, Budapest, Hungary, 23-25 June 2004, in support of the WHO Children’s Environment and Health Action Plan for Europe (CEHAPE), identified core data sets for indicators of:

- Health status;
- Exposure
- Policy (www.euro.int/document/che/edo08.pdf)

The CEHAPE core data sets for Environmental Risk Factors to be explored and controlled cite the following:

- Access to safe and good quality water and basic sanitation;
- Appropriate mobility, transport and road safety;
- Exposure to safe buildings and construction standards and materials;
- Reduction of indoor and outdoor air pollution;
- Control of hazardous chemicals;
- Removal of hazardous and disruptive noise;
- Control of occupational risks;
- Control of exposure to ionising and non-ionising radiation;
- Adequate food safety control and dietary intake;
- Protection from manmade disasters and the direct and indirect consequences of armed conflict such as landmines and post-traumatic stress disorders;
- Protection from drowning.

These sorts of core data sets provide a basis for the much-needed consensus building in contemporary society (Levine, 2006), and preparing **a methodology for prioritising an Action Research Plan.**

5.1 ACTION RESEARCH

‘Action research’ is often used to explore questions associated with such core data sets. It has been described as: *‘a comparative research on the conditions and effects of various forms of social action and research leading to social action that uses a spiral of steps, each of which is composed of a circle of planning, action, and fact-finding about the result of the action. It is research that each of us can do on our own practice, that ‘we’ (any team or family or informal community of practice) can do to improve its practice, or that larger organizations or institutions can conduct on themselves, assisted or guided by professional researchers, with the aim of improving their strategies, practices, and knowledge of the environments within which they practice’* (http://en.wikipedia.org/wiki/Action_research)

‘Actions’ in support of health and safety in tourist establishments can be considered under the following general headings:

- Needs;
- Goals;
- Approaches;
- Methods;
- Commissioning of studies;
- Systems of auditing progress towards the identified goals.

These headings can also be considered in terms of the ‘**evidence-based mutual investment model**’ (Philipp et al, 2002). In it, and in support of sustainable development, individual purchasers and providers seek and are able to attain equitable, mutually beneficial returns if local values, and environmental and product quality are sustained. They help to ensure the well-being of a local community is sustained, and that there is avoidance of the sequence of biological ageing thought to be associated with stressed or deprived populations.

Although studies do not seem to have yet been published for tourist resort areas in the Mediterranean countries, one study in Scotland by its *‘environmental rural affairs department showed people living in deprived areas were much more affected by noise, litter, cat and dog fouling and dumping’* (Editorial, 2005). Japanese research which found that living in walking distance of parks and green spaces increases the life expectancy of city dwellers also supports the first conclusions of work in eight European cities. That work concluded that *‘the health status of people living on social housing estates is determined largely by the quality of their immediate surroundings rather than their housing conditions’*; cities participating in the project were Angers (France), Bonn (Germany), Bratislava (Slovenia), Budapest (Hungary), Ferrara (Portugal), Forli (Italy), Geneva (Switzerland), and Vilinius (Lithuania) (Bonney, 2004). Such findings are important as: *‘they hamper all aspects of the European Union’s social, economic, educational, justice and health care systems and cost 3 – 4 per cent of the gross national product of the EU. Investing in the promotion of good mental health could greatly contribute to economic growth and the achievement of EU goals’* (European Union, 2006).

Local municipalities responsible for public protection in different tourist destinations in the Mediterranean can use these headings to structure responses to the following questions often asked by tour operators and travel companies in **health risks appraisals** about **hazards** (the potential of substances to cause harm) and the

associated **risks** (the likelihood of a substance to causing harm in the actual circumstances of use or other exposure) (Philipp and Hodgkinson, 1994):

1. What is being done locally to prevent and control local hazards to human health?
2. Who is undertaking the prevention and control, where and how is it being done;
3. Is sufficient being done to control and where possible prevent the known health risks?
4. Have all the hazards to human health been identified or is it possible some may still be unrecognised?
5. What health risks assessment studies are still needed and how best can they be developed, undertaken and managed?

Where or when there are many hazards to control but limited resources, **priority ranking for the introduction of preventive measures** is based on five main questions (Philipp and Hodgkinson, 1994):

- How serious is the problem in terms of the likelihood of death, disability, disease, discomfort or dissatisfaction?
- How many people are likely to be affected during a year?
- To what extent is an intervention technically feasible and likely to relieve or prevent the problem?
- What does an analysis show for benefits obtained from the risk, adverse effects of the risk, and the cost implications for different systems of hazard control?
- To what extent is the community likely to accept or adopt the intervention, behaviour or other change required?

Consideration of these questions provide a basis for the authorities in tourist resorts of the Mediterranean to explore and identify their local priorities for audit, further research and if needs be, improved control and prevention. Additional frameworks are also needed to support what has been described as the emerging and ever-changing theme of ‘*evidence-informed health promotion and public health*’ that is a theme in research and practice (Armstrong et al, 2006).

The need for new such frameworks has become increasingly important, given the socio-cultural impacts of tourism. For example, it has been noted that: ‘*tourism, well-developed, may foster or revitalize cultural patterns and may reinforce a sense of pride by residents in their culture. It means conserving the cultural heritage of an area which otherwise might get lost. In addition, these measures provide the opportunity for cross-culture exchange between tourists and residents who learn about each other and who come to respect one another’s culture*’ (Schulte, 1999).

For these purposes, a ‘Knowledge and Skills Framework’ is needed. Local municipalities need to ask whom has, and what educational and professional structures exist in their area to ensure competent persons are readily available to assess the health risks and evaluate local preventive and control measures. A ‘competency’ for such persons can be defined as: ‘*the possession of sufficient physical, intellectual and behavioural qualifications (i.e. knowledge, skills, abilities and attitudes) to perform a task or serve in a role which adequately accomplishes a*

desired outcome’ (D’Auria, (1999); Philipp and Dodwell, 2005). A competent and professional approach ensures:

- The group and its members know when and how to undertake risk assessments, for whom and exactly for what;
- The group and its members can and do undertake their tasks properly and with due diligence;
- The group, its members and those for whom and to whom they are responsible, are able to evaluate and audit the outcomes of what is done.

A basis for developing such frameworks has evolved from work undertaken for the WHO in the AESOHP programme (An Ecological Sense Of Healthy Place and Purpose). This basis has been brought together as three fully-referenced Discussion Papers and one fully-referenced book chapter:

- *Aesthetic Quality of the Built and Natural Environment: Why Does It Matter ?* (Philipp, 2001);
- *The AESOHP programme: An Ecological Sense Of Healthy Place and Purpose(AESOHP)* (Philipp, 2002)
- *Psychological and Emotional Health When Abroad* (Philipp, 2004).
- *The Anthropology of Humanitarian Aid: all the unwritten rules* (Philipp, 2007).

To help establish collaborative, intersectoral frameworks, the Centre for Health in Employment and the Environment, Bristol, England, in collaboration with the WHO, Royal Institute of Public Health, London, (www.riph.org.uk) and Arts Access International (www.artsaccessinternational.org), has devised three research methods to help local groups, organisations and authorities assess and value the environmental, social, cultural and economic components of well-being in their locality and to evaluate the needs (Philipp, 2006a). They are a response to the WHO challenge for researchers to:

- look ‘*into new, unfamiliar areas and work with new colleagues in new ways*’ (WHO, 1988a);
- consider different environmental impact categories (WHO, 1982);
- support the European Regional strategy of Health for All so that the components fit together as an ‘*integrated model*’ (WHO, 1988b)

Human values identified from studies are the basis of setting environmental standards. Such standards and adhering to them helps to underpin our endeavour for sustainable development. These research methods below are therefore presented here for further discussion. At the 5th European conference on Travel Medicine and Global Health in Italy, in March 2006, the invitation for collaboration with their pre-testing was welcomed by Heads of international Tourist Health and Travel Medicine Societies (Philipp, 2006a). Pilot studies are therefore being developed. For further information, intending collaborators are asked to e-mail the authors of this report at: Robin.Philipp@ubht.nhs.uk .

A Questionnaire Tool To Help Prioritise Local Environmental Health Problems In Need Of Further Audit And Research For Improved Prevention And Control

A group brainstorming exercise is first undertaken among local occupational and environmental health professionals to identify environmental subjects and topics coming within the remit of the group's interests and work. They are then grouped into categories such as 'general environment', 'neighbourhood', 'household', 'occupational', 'transport' and 'other situational environments'. From the groupings and the list of subjects or topics under each heading, a structured questionnaire is prepared and the same or other individuals in the same professional or special interests group are invited to score each item on the list for their opinions about it.

One such study, among members of the WHO Rural and Urban Development and Housing Network in 1992, developed its list by asking for responses to the following three questions:

- By the year 2000, all people in WHO's European Region should have a better opportunity of living in houses and human settlements which provide a healthy and safe environment. What do you think this means?
- How could this target be achieved?
- What information connected with the target might help in gaining the better opportunity mentioned above?

Individuals were then invited to score each environmental factor that had been identified, using a 5-point Likert scale, 1 = extremely good for health; 2 = good for health; 3 = neither good or bad for health; 4 = bad for health; 5 = extremely bad for health. The results were used to identify perceived priorities and help clarify what new training materials they needed (Philipp and Wood, 1992). This approach could be used for example, with the groupings of subjects and topics discussed in this report. [Also q.v. the Introduction to this report].

The method is presented below in a format for potential use with health risks assessment of tourist establishments in the Mediterranean. The headings in this Report could for example, comprise a list of topics for ranking. Other topics can be added to a list that could be compiled.

The Questionnaire: Choosing Priorities for Research and Audit:

The Topics for Research and Audit Matrix is a mechanism for allocating priority to topics. It helps us to strengthen an evidence base and focus on areas we see as being 'most important'.

Please help us to identify Health, Safety and Well-being topics of Tourist Establishments that you think should have priority for research and audit in the Mediterranean. Firstly, a brainstorming exercise has taken place to identify key topics among members of the Action Research Group. To identify them on the questionnaires each topic has been written out on a list and assigned a reference number. Against the reference number for each topic, please use the scoring system on page 2 of this questionnaire to evaluate each topic under the three headings, 'Frequency', 'Complexity' and 'Concern / Consequences'. Scores given for each heading of every numbered topic will be added to give a total for each topic, and for each questionnaire. Total scores given for each topic and by all participants will then in turn be totalled and divided by the number of participants. This will give a group average or mean score for each topic. The topics will then, from the average scores

given to each one, be placed in rank order; the highest scoring topic is ranked with the highest priority and the lowest with the lowest priority.

The findings will help us all to identify areas where for example:

- problems have been identified that need sorting out;
- there is an unmet need for new educational and training materials;
- the quality of preventive and control services could be improved;
- local and / or national standards or guidelines exist and against which we need to assess the effectiveness of risk assessment, monitoring, control and prevention.

Please, anonymously, complete and return this questionnaire to us today. If you write your name and contact address on a separate sheet at this workshop we will send you a final report of the findings and let you know what is being done with them.

THANK YOU

What is your job ? (Please state below, together with any comments you have about the study):

Using the scale below, please score each topic for its ‘frequency’, ‘complexity’ and ‘concern’:

Scale:

Frequency	1 = not often	2 = average	3 = often
Complexity	1 = straightforward	2 = average	3 = complicated
Concern	1 = not a worry	2 = some problems	3 = major consequences

Frequency = How often do I come across issues associated with this topic?

Complexity = How difficult is it to deal with these issues?

Concern / Consequences = If we get it ‘wrong’ is it a big problem?

List of Topics:

.....
.....
.....

Methodologies For Assessing (i) The Value To Human Well-being Of Local Environmental Qualities And Characteristics; and (ii) the Dimensions of Well-being and Local Support for It:

The term, ‘*well-being*’ has come into public usage relatively recently and has been little-studied. It indicates the holistic notion of achieving a state of health, comfort and happiness (RCP, 2005). Other societies have however for a long time addressed

the holistic aspects health and the concept of *'feeling'* or of *'being well'*. For example, the Hellenistic Greeks such as Aristotle, in exploring questions of ecology and organic unity, referred to *'ataraxia'* (inner peace), and *'eudaimonia'* (a feeling that reflects a combination of well-being, happiness, contentment, pleasure and satisfaction and of living the best life possible (Westra and Robinson, 1997).

Nowadays there is too, increasing and widespread interest in other views such as the New Zealand Maori view of health and well-being which: *'incorporates all aspects of a person's internal and external worlds. It assumes health in the spheres of physical, psychological, spiritual and family well-being and a balance among the individual, their environment and those around them'* (St George, 2004). The WHO definition of health incorporates these views: *'Health is a state of complete physical, mental, social and spiritual well-being and not merely the absence of disease or infirmity'*. Some other definitions also now incorporate emotional dimensions (www.mch.govt.nz/cwb). A moral dimension could too be considered.

Arising from this sort of background some governments now require their local authorities to address well-being. For example, the New Zealand Local Government Act, 2002, cites four components of well-being it requires to be addressed, taking a sustainable development approach: *'environmental'*, *'social'*, *'cultural'* and *'economic'*. In doing so, it has endorsed a view of the World Tourism Organisation (WTO) based in Madrid, that: environmental values, economic well-being and personal health are interdependent (Handszuh, 1991)

'Place check methods' have been developed to assess what improvements are needed in an area. They help to focus people on working together and to empower them. They comprise three basic questions:

1. What do you like about this place ?
2. What do you dislike about it ?
3. What needs to be improved ?

Fifteen more specific questions focus on people who need to become involved, available resources, access to other relevant programmes and factors associated with the place. One hundred more detailed and freely-available questions go into these areas in more detail (www.placecheck.info/placechecklist).

Based on this background, two 'ready-to-use' questionnaire study methodologies have been developed to help explore the interface between health and well-being, and the interdependence for personal and community well-being of perceived environmental values, and the associated economic, social and cultural factors. Following presentation of them at the Vth European Conference on Travel Medicine and Global Health (Philipp, 2006), their uses and potential worth are being piloted, at their request, in collaboration with the Royal Institute of Public Health, London, UK, several research groups and international societies for Tourist Health and Travel Medicine. Involvement in the studies is welcomed by the authors of this report.

(i) Characteristics and Qualities of the Environment We Value for Well-Being

The broad aim of this methodology is with it and the findings from applying it, to help capture ‘*the spirit of a place*’ (Philipp, 2006b), and thereby identify characteristics and qualities, associations and imagery that are valued for well-being and give a sense of ‘*belonging somewhere*’ and of being ‘*a part of something*’. As such they deserve upholding, cherishing or improving. Representative populations living in or visiting a locality such as schoolchildren, householders or employed persons in different local industries, businesses and public services, can be invited to adapt and use it either in focus group discussions, or as an administered open-ended questionnaire to develop an ‘issues pool’. From this issues pool a structured attitudes study can be developed to group, categorise and rank the values of specific, local characteristics and qualities such as its topographical and landscape features, icons in the local natural and / or built environment, and / or their working environment, or to help identify other social, economic, environmental and / or cultural factors that may influence well-being.

The Introduction on each questionnaire could include the following wording:

‘A Study Of Well-Being Associated With Living On [in] The [Insert name of the locality / area]’

By completing and returning this questionnaire, you will help us all to better understand what factors, qualities, characteristics and features of living on [in] the [Insert name of the locality / area] are important and have particular meaning and value. We should all be seeking to nurture and maintain them, not just for ourselves but also for people in the future. Findings will be made available through the local news media, municipal authority offices and public libraries and their websites. The study is a collaboration of [Insert name of local authority or other local organisation] with the World Health Organisation, Arts Access International [www.artsaccessinternational.org] and the Royal Institute of Public Health, London, UK [www.riph.org.uk] through the collaborative programme, An Ecological Sense Of Healthy Place and Purpose (AESOHP).

Please leave your completed questionnaire in the box provided at your local municipality office, local library, public information centre, or post it to [Insert mailing address]. Please note too, that although the questionnaire is anonymous, a little information about yourself is needed so that the responses can be grouped and the specific needs of any particular group better identified.

Question 1: What do you value and feel is important about living on [or in] [Insert name of the locality or area] ? (Please write your responses below – if you wish, continue over the page):

Question 2: What do you most miss when you are away from the [insert name of the locality or area] ? (Please write your response below – If you wish, continue it over the page):

Question 3: Do you feel you are part of your community on [or in] [Insert name of the locality or area] ? YES / NO. Please explain why:

Question 4: Is there anything else about living on [or in] [Insert name of the locality or area] that you particularly enjoy and get pleasure from / (Please write your response below – If you wish, continue it over the page):

Question 5: Are you: MALE / FEMALE (Please circle)

Question 6: Which is your age group ? (Please circle)

0 – 10, 11 – 15, 16 – 20, 21 – 25, 26 – 30
31 – 45, 46 – 55, 56 – 60, 61 – 65, 66 – 75, over 74

Question 7: What best describes the sort of situational group you are in:
(Please circle)

[At school] [Professional / Managerial] [Skilled worker] [Semi-skilled]
[Manual worker] [Not at present working] [Other] (if so, please state ...)

Question 8: What best describes your cultural, ethnic or religious group?
(Please state below):

Question 9: Where in the local area do you live ? (Please circle):

[A list of areas can be given such as possibly: 'in the town', 'by the beach', 'in the suburbs', 'out in the countryside', 'near the airport', 'close to the port' etc]

Question 10: How many years have you lived on [or in] the [Insert name of the locality or area] (Please circle):

Less than 1 year, 1 – 5 years, 6 – 10 years, 11 – 15 years, More than 15

Many thanks for your help,
[Insert name(s) of the organisers of the study]

(ii) A Study of the Dimensions of Well-Being and Local Support for It:

Introduction: dictionaries in the 1970's and 1980's, defined the term 'well-being' as synonymous with 'welfare'. Its usage has since changed to include a much broader range of meanings and interpretation. For example, the World Health Organisation definition of 'health' describes it as 'a state of complete physical, mental, social and spiritual well-being and not merely the absence of disease or infirmity'. Legislation in some countries also now, in the interests of present and future generations, requires local authorities to promote the social, economic, environmental and cultural well-

being of their communities. But very little is understood at present as to what is meant and intended by the term ‘well-being’. This study is part of joint work being undertaken to explore it further by the World Health Organisation, Arts Access International [www.artsaccessinternational.org], the Royal Institute of Public Health, London, UK [www.riph.org.uk], and collaborating Research Centres, through the programme, An Ecological Sense of Healthy Place and Purpose (AESOHP). The findings of this and other related studies will be made available through your local news media, municipal authorities and public libraries and their websites.

Question 1: What do you think the term ‘well-being’ means ? (Please write your response below – if you wish, continue it over the page):

Question 2: What does the term ‘well-being’ mean to you personally ? (Please write your response below – if you wish, continue it over the page):

Question 3: What are you aware of or know about that is being done locally in your area to support the well-being of people living in and / or visiting it ? (Please write your response below – if you wish, continue it over the page):

Question 4: What additional information or other help do you think is still needed locally in your area to help support the well-being of residents and visitors ? (Please write your response below – if you wish, continue it over the page):

Questions 5 – 10 complete this questionnaire. They can be the same as those given for the above questionnaire, to help assess “The Values to Human Well-Being of Local Environmental Qualities and Characteristics”

Please below add any comments or continue your responses to Questions 1 – 4:

Research Methods Using The Art Work Of Children To Assess Environmental Quality And Any Needs For Education And Improvement

The assessment of health risks and the costs of their prevention and control in tourist establishments, is as in all other environments, dependent on their perceived importance. Perceptions however differ. Our sense of ‘reality’, or of what is ‘real’ is a combination of an ‘internal perception’ and an external set of factors’ (Philipp, 2007). It needs therefore to be considered and in the context of values. A ‘value’ has been defined as: ‘a set of principles which are consistent and inform and direct our thought, action and activities’ (McGettrick, (2005). It is not however always apparent, what tourists value and wish to attain when they travel to a resort, or what values a host, tourist-receiving population wishes to sustain or introduce. How too,

can ‘*the spirit of a place*’ be identified and its values better understood and shared (Philipp, 2006b). This becomes particularly important when local authorities consider health, well-being, environmental opportunity in the context of sustainable development. [Also q.v. the Above Section: ‘Characteristics and Qualities of the Environment We Value for Well-being’].

Accordingly, when considering what is needed in tourist resort areas, the views of children about local values should also be sought; up to the age of 10 years, their views tend to be spontaneous, enthusiastic, imaginative and creative (Philipp et al, 1984; Philipp et al, 1986). ‘*Awareness and understanding of their views are important as in the context of a moral framework for environmental health and in our efforts for sustainable development, adult generations are entrusted with stewardship of the world for younger and future generations*’ (Philipp, 2001).

From this such reasoning an ‘Arts – Science Spectrum of Inquiry’ has been identified; ‘*it spans from the artistic, intuitive, inspirational and subjective viewpoints to the measurable, objective, deductive, logical and scientific perspective ... a dichotomy is not intended. Instead it is believed that in epidemiological and clinical strategies for public health, the scientific and artistic aspects of inquiry and expression can be combined ... In developing the research paradigm, it should be noted that positive stimuli from the external environment help us to nurture our personal, internal environments. Thereby mental health is improved and we are better enabled to sustain our sense of psychological well-being*’ (Philipp, 2001; Philipp et al 1999; Philipp et al 2002).

This approach has been developed to explore and undertake:

- Content analyses of the themes, topics, subject matter and the ways it is portrayed, background features and moods (e.g. happy, contented, relaxed, welcoming and tranquil, or angry, upset, bitter, fierce or gruesome) of spontaneously produced children’s poems, drawings and paintings;
- Specific literary and visual arts inquiries with children for their views of: (i) ‘*What I think is important in the world around us*’; (ii) ‘*What I like / enjoy / value / look forward to most in my Summer / Winter holiday*’; and (iii) ‘*What is love?*’.

References to some of the published studies are given in the book chapter, ‘*Aesthetic quality of the built and natural environment; why does it matter?*’ This chapter, with permission of the WHO, is now freely available on the website, www.artsaccessinternational.org.

Children’s art from schools participating in the WHO-initiated European Network of Health Promoting Schools, has also been used to communicate ideas and feelings about the environment and health, at least at the Third Ministerial Conference on Environment And Health, 16 – 18 June 1999, organised by the WHO Regional Office for Europe and at which 54 countries were represented (Price, 1999).

Within different tourist resort areas, local schools, in collaboration with other interested groups, can utilise such arts-based methods to help identify from a contents

analysis of submitted art works by different age, sex, socio-economic and geographical populations, aspects of the:

- met or unmet local environmental and educational needs;
- qualities and characteristics, local icons, environmental and heritage features that are valued by local residents;
- local art products that could be prepared from the submitted material such as an illustrated book of drawings and / or poems with an accompanying text from each child explaining what their art work depicts, why they chose to do it and what it means to them – alternatively, a book of illustrated short stories, book of photographs, DVD of video material, greetings cards could be prepared – such art products might arise from a competition based in one or more schools, and with individual and / or group prizes for different age and sex groups, and be accompanied by an exhibition of the submitted art works.

Recent advances in digital information and communication technologies also open up new possibilities. They can be seen as a set of tools which can be chosen as and when they are appropriate in the creative process. For example, the Bristol, England-based and UK Government-supported Futurelab has developed a “Pleasurable Cities” project as an investigation into how everyday technologies can be used to create a dialogue between young people about their local community spaces (www.futurelab.org.uk).

Often too, tourists and other visitors record their impressions and experiences of an area with their recordings as personal diaries, blogs, travel journal articles, photographs, paintings, drawings, sculpture. At the least, they later on assist memory recall, reflection, and associations of thought and feeling that can assist value formation and lead subsequently to possible changes of attitude and behaviour. Examples of such change include those towards personal responsibility and individual accountability associated with standards of dress, patterns of alcohol consumption when abroad in some tourist resorts, and the casual discarding of litter. Greater awareness of local values should help more responsible behaviour (Philipp, 2007). Advertising and sales of local art products such as works by children from schools-based activities that identify or illustrate local values, could help to facilitate any needed change.

Three Suggested Topics Of Study For Consideration With Groups Of Children That Could Lead To Worthwhile Research Findings And Arts Products

1. What makes [*INSERT: Name of the town, village, locality*] a special place?
2. What I think is important in the world around us.
3. What I like or do not like about [*INSERT the name of a local site or feature such as the beach, town square, town centre, local tourist resort*] ?

Findings and artworks from such studies can be used to help address questions such as:

- How do the interests develop for where people wish to travel and what they wish to do when there?
- How can tourists be helped to truly ‘see’, value and enjoy what is there?

- How can people be better helped to understand and respect local cultures, customs, preferred habits and values?
- How might tourists be further encouraged to think about and record their impressions of what they have seen and done and incorporate them into their own lives back home and for their improved sense of well-being? (Philipp, 2006a)

It is hoped that the following example from a travel guide book to Venice, illustrates something of the ‘*values information for tourism*’ that can be derived from arts inquiries. This information helps to attract tourists through the associations of imagery and metaphor, and ways the imagination can evoke pleasure, enjoyment and delight:

Napoleon described Piazza San Marco in Venice as: ‘*the most beautiful drawing-room in Europe, for which it is only fitting that the heavens should serve as ceiling*’ (Jepson, 1995).

Other methods for health risks assessment in tourist establishments that are used include evaluations of the costs of not implementing appropriate, cost-effective control and prevention measures. Examples include:

- Economic modelling, and costs associated with diminished social capital (Philipp and Dodwell, 2005), and
- Health effects scenario modelling, - a technique often associated with disaster prevention and planning

These methods have been applied to assess costs and benefits. For example, on the Adriatic coast, Italy, associated with the sudden appearance of an algal bloom in the 1980’s, the tourist bed occupancy in one mid-Summer dropped suddenly to 50% of capacity. In Turkey, after Avian Influenza was discovered in January 2006, instead of the usual 10% annual increase in visitors, a figure which has held steady since 1985, tourist numbers stayed at 21 million during 2006, with a dramatic fall in tourist package prices (Editorial, 2007a). In Tenerife, the Local Authorities were in February 2007, seeking a rational outcome following a decision to cancel some of the biggest carnivals for “being too noisy” (Editorial, 2007b). Globally, the cost of doing something to combat climate change has been estimated as 1% of global gross domestic product, but the cost of doing nothing is thought to be up to 20% of global gross domestic product; the same report concluded that: the cost to the environment of each ton of carbon dioxide emitted is £50 (UK), equivalent to 75 Euros or \$95 (USA), “*a figure that gives us a financial yardstick of the damage we are doing by our continued reliance on fossil fuels*” (Stott and Godlee, 2006).

6 DEVELOPING AND CO-ORDINATING THE NEXT STEPS TO HELP REDUCE HEALTH RISKS ASSOCIATED WITH TOURIST ESTABLISHMENTS IN THE MEDITERRANEAN

The WHO Collaborating Centre modelling approach is being adopted by, for example, Arts Access International (www.artsaccessinternational.org). It could also be used in the Mediterranean region to establish a MAP network of “Icon Research and Education Development Centres for Health and Well-being”. This network could

be deployed to help reduce health risks in the Mediterranean. It could be developed to:

- help to strengthen and further build the present academic and service environmental, public protection and health promotion networks;
- collate resources available from the different research projects to date;
- provide an on-line resources system;
- identify priorities for further health risks assessment with the above Delphi Study methodology;
- help co-ordinate studies using the above 'Action Research' methodologies;
- provide tourist and other public health information;
- assist with education for an awareness and appreciation of tourist health and environmental values and for how improved understanding of value systems evolve;
- encouraging and helping to foster a greater sense of personal responsibility and individual accountability for the environment and individual lifestyle.

The University of Naples, Italy, already undertakes some coordinating work in related areas. It may be able to support such an 'icon role' if this suggestion is taken forward. 'Icon Centres' have for example been defined by the Department of Conservation, New Zealand Government, as: '*the Department's most distinctive sites in or adjacent to National Parks, World Heritage Areas and maritime parks or reserves. They are usually located on key tourism flows. They are focused on telling key conservation stories and informing visitors of recreational opportunities*' (DoC, NZ Govt., 2002)

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