

# Environmental Sanitation in European Tourist Areas

Report on a WHO Meeting

Montpellier  
25-29 September 1978

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# WHO MEETING ON ENVIRONMENTAL SANITATION IN EUROPEAN TOURIST AREAS

*Montpellier, 25-29 September 1978*

## 1. INTRODUCTION

Today we are witnessing a major expansion of tourism due to socio-economic improvements and greater opportunities for travel through the development of motorways and air transport (including charter flights).

Tourists not only wish to visit other countries but also to enjoy a different climate to that at home. Most are attracted to the sea and sun in summer, and to mountains and snow in winter.

Only a brief mention need be made of tourists who visit capital cities to see historic monuments and archaeological remains, since they merge with the resident population, provided adequate hotels and properly organized reception services are available.

The present study is concerned with the problem of large concentrations of tourists in very confined areas where the residents are greatly outnumbered by tourists during the high season, sometimes in a ratio of 1 to 20.

This situation causes serious technical and financial problems in providing sanitation and health services for both tourists and residents and in protecting the environment.

### 1.1 Background

Under its programme of activities to deal with health problems arising from large-scale population movements in international tourism, the WHO Regional Office for Europe convened a Working Group on the Public Health Aspects of Tourism in Torremolinos from 23 to 27 July 1973, with the objective of drawing up terms of reference for a practical guide on tourist health for the use of Member States in the Region lacking specific legislation in this field.

A *Guide pratique d'hygiène du tourisme* was subsequently issued by the Regional Office in 1978, with information on the following subjects:

- food hygiene
- water supply
- disposal of liquid wastes
- disposal of solid wastes

- sanitation in camping grounds and caravan sites
- swimming pools and bathing places
- control of insects, rodents and other noxious animals
- control of communicable diseases
- protection of the environment
- health aspects of the development of tourism and regional planning
- legislation, inspection and control
- health services and facilities
- information of health staff and health education of the public
- transport hygiene.

This guide is concerned more with needs in protecting the health of tourists than with conditions to be met in developing large-scale tourist complexes, and applies mainly to small, isolated tourist units.

*A Guide to sanitation in tourist establishments*, intended especially for developing countries was issued by WHO headquarters in 1976.

The Working Group also recommended that a conference of all countries of the WHO European Region be convened in 1976 to review the progress made and to consider the problems still faced in the area of international tourist health. The conference could not be convened that year owing to financial difficulties, but the French Government offered a voluntary contribution to finance a meeting on the subject, with the priority objective of studying the question of environmental sanitation in tourist areas.

Since 1973 seasonal movements of tourists in Europe have increased steadily, mainly to coastal resorts in the south, but also to winter sport resorts. Environmental sanitation is now a major concern in the European tourist areas, as they are subject to considerable seasonal fluctuations in population and to the effects of climate and concurrent economic development not readily compatible with tourism. It should be borne in mind, however, that the primary problems have already been solved in the European Region, i.e., most of the tourist areas now have the minimum basic health facilities and health surveillance services. The meeting was therefore concerned with secondary problems, such as the capacity of existing water and sanitation services in tourist areas to meet the demands of peak, seasonal populations or to operate during the dry season.

The meeting was hosted by the town of Montpellier. The participants included public health physicians, sanitary engineers, ecologists and urban administrators from 12 countries in the Region, both those receiving large numbers of tourists for summer vacations at coastal resorts (France, Greece, Italy, Morocco, Portugal, Spain, Turkey, Yugoslavia), for winter sports (France, Italy, Switzerland), and for winter sunshine (Algeria, Greece, Morocco, Spain), and those supplying tourists (Belgium, France, Sweden, Switzerland).

Practical arrangements for the meeting were made by the Interministerial Commission on the Development of Coastal Resorts in Languedoc-Roussillon,

and the secretariat was provided jointly by the WHO Regional Office and the Institute of Regional Development and the Environment, Montpellier.

The meeting was opened by the French Secretary of State for the Environment.

## 1.2 Scope and objectives

The objectives set by the WHO Regional Office were as follows:

- (1) to ensure wider dissemination of the conclusions and recommendations of previous WHO activities in the field of international tourist health, as summarized in various documents (Annex II);
- (2) to recall the WHO recommendations on essential requirements with regard to:
  - sanitation and safety of swimming pools and bathing places
  - sanitation and health surveillance of caravan sites and camping grounds
  - sanitation in hotels, restaurants and tourist housing developments
  - control of mosquitos and noxious animals in tourist areas
  - public health and epidemiological surveillance in relation to international tourism;
- (3) to make a fuller study of the implications of large seasonal fluctuations in population for the design, operation and management of health facilities and services in tourist areas;
- (4) to make a fuller study of the implications of climatic conditions, such as the dry season in the Mediterranean region and frost in the mountains, for the design, operation and management of health facilities and services in tourist areas;
- (5) to identify health and ecological problems due to the existence of concurrent economic activities not readily compatible with tourism (heavy industry, heavy transport, shellfish growing, etc.) and, accordingly, to determine health and ecological criteria for regional planning in tourist areas;
- (6) to study the specific problems of sanitation in winter sport resorts (facilities, operation and management of health services).

The main topics discussed during the meeting, with particular reference to seasonal fluctuations in population, were as follows:

- water supply;
- disposal of liquid and solid wastes;
- implications for the management and financing of water and sanitation services;
- special problems in the management of water resources in tourist areas where peak consumption occurs during the high season;
- ecological and pollution problems due to the use of areas concurrently for tourism and economic activities (industry, transport, agriculture, fishing and especially shellfish and fish culture);
- special problems of sanitation and pollution control in mountain resorts, especially when the high season occurs in winter, and difficulties due to frost.

### **1.3 Implications of seasonal fluctuations in population for water supply and sanitation**

#### **1.3.1 *Effect of seasonal fluctuations<sup>a</sup>***

Each year there are large seasonal influxes of population to the coastal areas of European countries, especially in the Mediterranean basin, which may cause serious problems in respect of water systems.

When the high season coincides with the summer drought, the problems include:

- difficulties in obtaining supplies, lowering of the levels of surface water and aquifers (low rainfall);
- need for more thorough treatment of waste water discharged into rivers or lakes;
- if the seasonal increase in population is no greater than 3 to 1 the problem is not serious, but it can at times be as much as 20 to 1, in which case the peak flow will be adversely affected by piping. Pressure tanks must then be installed in the water system and some dual sewerage will be required.

One solution consists of designing a system with smaller sections than would be required for normal community demand; one or more may then be shut down in winter and the others operated at regular capacity.

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<sup>a</sup> Based on a contribution by Mr Pietri.

Ensuring sanitary functioning of a water system is the hardest problem. Pressure tanks may be installed at certain points in the system in order to reduce the diameter of the piping, or water for irrigation and consumption can be kept separate, when either a raw supply or suitably treated effluent is available for the latter purpose nearby.

It is essential to check the residual chlorine content very frequently, not only at the plant outlet, but also within the supply system, and to adjust the chlorination accordingly.

### 1.3.2 *Public health problems: regulations and their application<sup>a</sup>*

Many diseases are transmitted by water: typhoid, paratyphoid, dysentery, cholera, gastroenteritis and infectious hepatitis. The best means of safeguarding the health of consumers is to supply safe water through a properly designed and well maintained system.

The degree of health surveillance should depend on the number of consumers and hence the extent of epidemiological hazards. Special regulations are therefore required in tourist areas.

Surveillance should be strengthened before the tourist season, especially in camping grounds, so that preventive action can be taken if the results of sampling are not satisfactory. It should also be stepped up during the period of maximum occupancy.

Bacteriological control of chemical quality should be increasingly stringent. Testing for viruses and micropollutants should also be carried out.

Finally, surveillance should be applied to private facilities (housing developments, hotels, restaurants, etc.) and to groundwater.

### 1.3.3 *Design and construction of systems*

Supplies should preferably be derived from groundwater. If this resource is inadequate, the use of elevated reservoirs or temporary overdraft and even recharging of aquifers may be envisaged.

It is very difficult to determine the optimum size of a system. Water demand cannot easily be foreseen, especially in the case of a temporary influx of population (holidays, weekends, etc.). Sometimes demand may be influenced by the charges made for water, while ensuring that the supplies are safe and as plentiful as possible.

As the cost of supplies is strongly influenced by the capital investment outlay, a "progressive" approach is needed to avoid having excess capacity in a system, which is expensive and may even cause problems in the low season. It is preferable to temporarily step up the yield of an existing system, at low capital and higher operating costs.

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<sup>a</sup> This and the following sections are based on a combined report by Mr Girardot and Professor R. Baylet.

Preference should be given to treatment systems little affected by fluctuations in the rate of flow, which can be temporarily overloaded or be fitted with equipment to increase the yield, such as lamellor tanks, or high hydraulic flow filters. In some cases a certain degree of overload can be handled by using specific reagents. To improve taste, it is more economical to use powdered as compared with granulated activated carbon in settlers, for short periods.

It may be possible to meet peak demand by 24-hour operation of a pumping station, even if the electromechanical efficiency of the equipment is reduced for a short time.

More attention should be paid to determining the optimum size of reservoirs: to ensure a regular daily supply, the capacity of the reservoir should correspond to a certain proportion of the daily demand, provided the piping and treatment plant are reliable. However, to provide regular weekly (including weekend peak) supplies of safe water, a much greater capacity may be necessary.

Because of the danger of groundwater infiltration, it is important not to use piping of a diameter greatly in excess of that required to maintain a safe rate of flow when demand is low (force pumping can be used when it is high).

#### 1.4 Disposal of liquid and solid wastes<sup>a</sup>

Apart from diseases transmitted in water supplies, infections may be conveyed through sewage, e.g., trematode and nematode: ankylostomiasis, schistosomiasis, ascariasis and trichuriasis.

Procedures for treatment of liquid and solid wastes should meet ecological criteria (limiting the impact of wastes in the environment) and health criteria. In countries where water is in short supply, treated effluent may be used for industrial or agricultural purposes (watering of golf courses, green space and lawns), provided its consumption is strictly forbidden.

The treatment to be applied to waste water depends on the receiving body: lakes and ponds are affected by nutrients, oxidizable organic matter, nitrogen and phosphorus (risk of eutrophication).

Two factors must be borne in mind with regard to treatment of waste water in tourist areas with numerous camping grounds: (i) lower water consumption resulting in higher pollutant concentrations, a predominance of ammonia residues, high pH, less detergent, and daily peak demand making the system harder to amortize; and (ii) different food habits (more fruit and vegetables and less carbohydrate), resulting in a higher proportion of settleable matter. The very high degree of removal of suspended matter is required

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<sup>a</sup> Based on reports by Professor Bontoux, Mr de Rouville, Mr Gervais, Professor R. Benaim and Mr J. Bebin.

if the treated effluent is to be discharged into the sea (after studying the currents, winds and ocean bed). Because of the risks of shore pollution, especially in the Mediterranean basin, marine discharge should in fact be an exceptional practice.

#### 1.4.1 *Disposal of liquid wastes*

The conventional, biological methods are not suitable for treatment of waste water in tourist areas (except at low loads).

During the high season several methods may be used including physico-chemical treatment, and in small systems, most suspended and colloidal matter may be removed with flocculants (aluminium or iron salts, lime, polyelectrolytes). The main disadvantages of these methods are that they produce large quantities of sludge which are difficult to dry, involve high operating costs and achieve only limited disinfection, thereby necessitating additional chemical or biological treatment (stabilization ponds).

Generally, a combination of physicochemical and biological methods is used, either to allow some adjustment of the procedure according to season or to obtain the desired degree of purity; if a high degree is required, the physicochemical treatment is followed by a biological process such as passage through a porous filter.

In general, if tertiary treatment is required (bacteriological degradation), stabilization should be carried out downstream, with chlorination limited to exceptional situations where very little land is available.

At this point attention should be drawn to the value of waste stabilization ponds, which can be used as the only form of treatment for wastes in small communities (although they have been used for towns of 200 000–300 000 people) or for tertiary treatment in large communities. Because of the metabolic plasticity of the organisms and with the buffer capacity of the ponds, excess pollution can be absorbed without difficulty. Using this process, the pollution of loads 2–3 times (or even 5–6 times in peak periods) greater than normal can be absorbed.

If effluent is stabilized for about 20 days, it will have the same quality as bathing water, with regard to content of faecal organisms. Rates of destruction as high as 99.99% for bacteria and 80–99% for viruses have been reported in current studies (Professor Leclerc, Liege, and Professor R. Baylet, Montpellier). This process seems particularly suitable for use in sunlit Mediterranean areas and is less costly than traditional methods, and while maintenance costs are very low.

The disadvantages of waste stabilization ponds are:

- the land area required ( $4\text{ m}^2$  per person in the Mediterranean region and up to  $10\text{ m}^2$  in less sunlit areas);
- the need to remove large quantities of sludge through periodic cleaning;

- 75-85% removal of BOD<sub>5</sub>;
- production of nitrogen, phosphorus and microscopic alga.

Research is under way on a means of linking the activated sludge technique with ultrafiltration for wastes disposal in small tourist communities (camping grounds, hotels, etc.) by the sea or lakes. This process could accommodate considerable variations in load while supplying water of excellent quality (especially bacteriological).

#### 1.4.2 Sewerage

To allow for variations in loads and the risk of anaerobic fermentation, without installing oversize sewers, solutions such as the following are required:

- construction of dual systems (except in certain cases);
- parallel installation of two or more sewers of different diameters to allow conveyance of different loads at the same flow speed;
- acceleration of the flow through pumping, if necessary;
- reeration in stages over a long distance.

Allowance must be made for the risk of overflow in the sections in service, if the pumping breaks down.

#### 1.4.3 Disposal of solid wastes

As the fruit and vegetable wastes making up most of the household refuse in summer resorts are putrescible, a daily collection service should be provided. Individual dustbins should have close-fitting lids.

The solid wastes also contain refuse collected from beaches, litter from streets and public places and materials discarded from food shops.

Holders for plastic litter bags may be installed to encourage tourists to take more care in keeping beaches and green spaces clean. The bags should be changed by the street cleaning service regularly.

Where seasonal fluctuations in population occur, it is difficult for refuse collection services to make full use of equipment and staff in the low season, unless suitable interdistrict agreements are made.

Several disposal methods may be envisaged.

Sanitary landfill is an excellent technique provided it is properly supervised and enough machines are available for spreading, compacting and covering the wastes during the peak period.

Because of the composition of the refuse in Mediterranean areas, it cannot readily be incinerated unless it is mixed with highly combustible industrial wastes.

Finally, composting can be recommended, especially if the compost can be used in agriculture.

Some difficulty may be encountered in adjusting incineration or composting equipment to variations in load if there is only one treatment line. If a system has sufficient capacity only for the slack period, input may be regulated through buffer storage.

Where refuse is incinerated or composted together with sludge from a treatment plant, the input of the two components is generally phased because of the time required for stabilization or digestion of sludge. Finally, the process may be regulated to some extent by setting up interdistrict associations.

### **1.5 Implications of seasonal fluctuations in population for the management and financing of water and sanitation services in tourist areas<sup>a</sup>**

Public services in tourist areas may be managed directly by local authorities or interdistrict associations or indirectly by private bodies.

For water supply, wastes treatment and disposal of household refuse, it is often preferable to group a number of localities with different activities (a tourist area with an agricultural, normal urban or even light industrial area) in order to smooth out the summer peaks.

With regard to financing it is reasonable to expect tourists to meet the additional costs they incur. Such problems should be solved through a long-term development policy. Forecasts in respect of development, facilities and technical services are essential.

#### *1.5.1 Time*

Measures may be taken to spread the use of tourist areas more evenly in time, including:

- at national level, measures to promote the staggering of paid vacations;
- at local level, commercial measures to diversify the tourist clientele (foreign visitors, retired persons, etc.) and to enhance and diversify the tourist potential of resorts (festivals, congresses, winter seasons).

If the operation of a system is properly planned (major and routine servicing, overhauls, etc.), the workload can be spread over the whole year.

#### *1.5.2 Space*

In many cases tourist areas are not too far from large population centres, which are relatively empty during the holiday season, with less demand for

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<sup>a</sup>Based on information provided by Mr Rousselle, Professor R. Geric and Mr Baguenier.

services as a result. In such cases the possibilities for technical coordination should be investigated with a view to pooling facilities. It should in any case be possible to coordinate the assignment of staff globally, according to the needs, and thus avoid having to recruit seasonal workers.

Area planning measures of this kind, although small, are by no means negligible, and contribute to regional development not focused exclusively on tourism but giving impetus to year-round activities and the construction of houses for permanent occupation.

### 1.5.3 *Proper use of groundwater*

It is important to estimate possible water shortages and to plan remedial measures. Models to forecast changes in aquifers and the distribution of stocks, used in conjunction with management models, should allow planning of water economies or even supply restrictions in accordance with the available reserves, so as to minimize inconvenience for consumers.

### 1.5.4 *Economic equity*

Overall charges for public services (water supply, refuse collection, sanitation) do not require tourists to meet the additional costs they impose on communities. Charges per  $m^3$  of potable water should be set according to a dual scale: fixed monthly rate plus a charge per  $m^3$  consumed, or a fixed rate for a standard quantity (e.g.,  $50 m^3$  per year per consumer) plus a charge per additional  $m^3$ . However, to avoid wastage, the fixed rate should not be set too high. Similarly, the application of decreasing rates according to quantity used and regularity of consumption would encourage more beneficial forms of tourism than ownership of second homes, i.e., hotels, holiday camps, etc.

## 1.6 **Special problems in the management of water resources in tourist areas where peak consumption occurs during the dry season<sup>a</sup>**

For any tourist development, adequate water resources must be available. If they are not, a project should not be pursued, whatever the natural beauty of the site.

Even under optimum conditions, the provision of water to tourist centres poses serious problems, as peak consumption occurs at a time when the input from rainfall is greatly reduced or nil. Supplies must therefore be taken from sources not normally used, which requires special health precautions. This problem arises especially in coastal areas or islands.

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<sup>a</sup> Based on a contribution by Professor J. Avias.

Water may be obtained by:

- piping from inland areas with plentiful supplies;
- supplementary tapping of groundwater;
- overdraft of aquifers;
- underground storage;
- surface storage;
- use of brackish or salt water (after treatment);
- reuse of waste water for specific purposes (agriculture or industry).

Piping of water from neighbouring areas with plentiful resources is preferable from the health standpoint, whenever feasible.

Use of brackish or salt water after treatment is too costly, except in special cases, but the progress now being made in developing techniques such as reverse osmosis suggests that this might become a competitive approach.

Supplementary seasonal tapping of groundwater is possible if detailed hydrogeological surveys show the presence of small aquifers from which higher than normal yields may be obtained temporarily, without causing damage (for instance, a survey of seasonal resources in the Languedoc-Roussillon region showed a potential supply of  $4 \text{ m}^3/\text{s}$ ).

Heavy overdraft of aquifers has been viewed with caution up to now because of the possible hazards. However, the long-term effects on yields appear to have been overestimated. In France, aquifers depleted by the 1975 drought recovered much faster than had been expected. However, lowering of water levels can have harmful consequences, including:

- pollution,
- salt water intrusion into coastal aquifers (a risk which may be lessened by injection of treated waste water to form a pressure barrier).

Surface storage has many disadvantages:

- eutrophication,
- losses from evaporation,
- costly use of land.

Such supplies can rarely be used for tourist consumption, as there are considerable variations in water levels during the summer.

In many respects underground storage may seem advantageous, although a number of preliminary steps must be taken, such as surveying the aquifers and determining the yields. Certain karsts or paleokarsts should be suitable as reservoirs, with adequate biological protection.

Aquifers may be recharged by:

- introduction of heavy winter flow (with a risk of silting);
- treatment of surfaces to increase infiltration;
- introduction of treated waste water.

Injected water may be chemically incompatible with the permeable matter. Nevertheless, this risk should not be overstated: biological tests have shown that the introduction of polluted water into permeable matter does not cause extensive bacterial pollution, except in karsts.

Intensive tapping, as in Malta, may virtually exhaust the available resources. In this case recycling of waste water must be envisaged, subject to strict precautions such as:

- epidemiological surveillance,
- monitoring of pollution by chemicals, especially nitrates (for which appropriate treatments can be envisaged).

Finally, it may be advantageous to develop multiple uses of water (land treatment).

### **1.7 Ecological and pollution problems in areas used concurrently for tourism and economic activities<sup>a</sup>**

Two types of problem arise:

- nuisances for tourists;
- nuisances caused by tourists for the environment (sea, lakes, rivers).

#### **1.7.1 Nuisances for tourists**

Nuisances due to the proximity of industrial or port areas (noise, odour, air pollution, etc.) are discussed in chapter 9 of the *Guide pratique d'hygiène du tourisme*.

Stringent health regulations should be enforced to prevent serious diseases or epidemics:

- rabies, spread mainly by dogs;
- typhoid and dysentery, which may be spread by flies (mechanical process);
- typhus fever and bubonic plague, for which rats are a potential reservoir;
- wasp stings or snake bites.

Attention is drawn in this respect to mosquitos which infest certain areas in southern Europe, although this subject is discussed at length in chapter 7 of the *Guide pratique*.

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<sup>a</sup> Based on communications by Dr L. Landner, Professor M. Amanieu and Mr R. Ringuelet and a report by Mr A. Yana.

Mosquitos are malaria vectors in certain countries overseas, as they were in Europe up to about 1940 and could well be again. Mosquitos may also carry arboviruses. A large population of culicine mosquitos may constitute such a nuisance as to prevent any development of tourism. This was the case in Languedoc-Roussillon in France, where mosquito control had to be undertaken before developing the region for tourism. Human activities (discharge of wastes into the environment) increase year by year the numbers of certain blood-sucking insects whose presence and density are related to surface water pollution.

Control methods include:

- application of chemical pesticides (mainly specific larvicides);
- sanitation of marshland, drainage or construction of polders and, more simply, destruction of all stagnant water containers.

### 1.7.2 Nuisances of tourists for the environment

Conflicts may arise where tourism is undertaken concurrently with economic activities such as fishing, aquaculture and shellfish growing in coastal areas and industry, agriculture and hazardous transport in others.

These activities affect the balance of the aquatic ecosystem and impair the aesthetic and recreational quality of tourist sites.

Shellfish growing and aquaculture are being actively developed, but contamination of the products by pathogenic viruses, bacteria or chemicals may be a hazard for the consumer. The resulting communicable diseases include typhoid and paratyphoid fever, salmonellosis, intoxication by *Vibrio parahaemolyticus*, infectious hepatitis, cholera and seafood poisoning leading to paralysis.

Waste water treatment is not always adequate and the product is rarely of the quality that could be expected.

Although appropriate treatment removes 90% of pathogens (except where waste stabilization ponds are used as a tertiary process), the effluent can cause appreciable bacteriological and viral contamination near the point of discharge.

Organic substances in waste water, which use up large quantities of oxygen, possibly with H<sub>2</sub>S production, may in some circumstances kill fish populations.

Nutrients such as phosphorus and nitrogen, which precipitate the growth of phytoplanktons in estuaries or lakes, may cause eutrophication in such environments.

Toxic substances such as pesticides, detergents and heavy metals are serious hazards for aquaculture when they occur in above normal concentrations.

Tourist development can disrupt coastal activities such as fishing: overcrowding of ports and coastal waters by pleasure boats, pollution by discharged

motorboat fuel, toxic components of antifouling paint, etc. Apart from the nuisances of human pollution for fishing, shellfish growing and fish culture, tourist development can damage the environment in ways such as:

- segmentation of lakes by railways or roads, which obstruct hydrological transfers and feedback and the completion of biological cycles;
- unplanned extension of masonry shorelines, inland ports and marinas, which prevents natural silting of the excess algal biomass synthesized in the lake.

In conclusion, environmental protection and sanitation of tourist areas are indissociably linked to the balance of the ecosystem of which man is a part.

This is particularly true of lakes: because they are vulnerable and at the same time highly resistant, they provide the typical example of an environment where comprehensive surveillance allows rapid identification of dangers and the adoption of remedial measures.

### 1.8 Special problems of sanitation and pollution control in mountain resorts

The design and operation of refuse collection and sanitation services pose special problems in mountain resorts.<sup>a</sup>

These problems are associated with large fluctuations in population, very low temperatures and the higher standards of living of tourists who demand amenities without the concern for the needs of the local population. "Luxury class nomads" have little civic sense. Tourists and developers should therefore be made aware of the special problems faced in mountain areas. Metal notices describing measures to be taken in particular circumstances, produced by the French Ministry of the Environment and Conditions of Life, provide a good example of a health education device for this purpose.

#### 1.8.1 *Disposal of liquid wastes*

The following remarks also apply to the disposal of household refuse.

- The greater the size of a system installed in a locality for a particular purpose, the lower its specific cost.
- The greater the size of a network of piping (or vehicle transport), the higher its specific cost.

Thus it is important to seek an optimum overall solution, involving minimum costs.

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<sup>a</sup> Based on communications by Professor Y. Maystre, Mr G. Castaigneau and Mr G. Gumin.

Sewage should be collected in a separate system; if other drainage water (melted snow, runoff from fountains, wash houses, etc.) is allowed to enter the system, treatment of the sewage is virtually impossible. Another advantage of a separate system is that relatively warm effluent is conveyed to the treatment plant.

Oil and grease should not be allowed to enter sewer systems, since they settle on the inner walls of the sewers and impede the functioning of the aerators at the treatment plant. In mountain areas piping should be laid somewhat higher than in lowlands; the difference in depth may be as much as 3 m in extreme cases.

The treatment plant should be served by a road, kept permanently clear for use at all times and allowing access to the different parts of the installation. It is preferable to cover inlet equipment such as screens, sand and grease traps, air pressure tanks, rotating biological filters and the mechanical sludge driers. On the other hand there seems no reason to cover primary or secondary sedimentation tanks or the activation tanks. In some resorts, plants are built entirely underground to avoid noise and odour.

The choice of a treatment system depends on:

- the extent and rapidity of the fluctuations in population;
- the local topography;
- altitude, cold, snowfall, etc.

At present traditional techniques are preferred and physicochemical processes using activated carbon filters are still the exception. If level ground is available, oxidation ditches may be used.

Dewatering of sludge is the major problem. Stabilized sludge cannot easily be stored until the summer for transfer to open drying beds. Consideration should be given to reuse of sludge, mixed with household refuse compost, for restoring ski runs after the season. Sludge may also be applied to crops and pasture, subject to agricultural and public health requirements. Often, however, sludge must be dried artificially. It may then be stored outside, without harming the environment, until the weather breaks.

### 1.8.2 *Disposal of solid wastes*

To avoid prolonged, inaeathetic accumulation of refuse in streets, a frequent, even daily collection service must be provided. Another solution is to install large containers at various locations in the resort. This approach naturally calls for some discipline on the part of tourists, and the authorities must keep the public regularly informed about the refuse collection arrangements.

Because of the usual composition of the refuse, incineration seems to be the only disposal method suitable for tourist areas. Refuse from mountain resorts is generally transported to lowland incineration plants.

## 2. CONCLUSIONS

### 2.1 Seasonal fluctuations in population

Tourism can be developed in an urban or rural area by renting part of the existing accommodation to tourists and creating certain facilities of marginal importance: construction of a small number of medium-sized hotels, or small-scale camping grounds, a touring housing development, etc.

The ratio of new facilities for tourism to those already available for other purposes varies, and new development may encompass the construction of large-scale complexes or even new towns exclusively for tourists. Generally, tourist activities are large-scale but of very short duration.

To allow the subsequent organization of services, attention must be paid to health needs from the inception of a project. Tourism influences health and should be physically or psychologically beneficial. However, large numbers of tourists are concentrating in certain areas, and there is a danger that the acceptable capacities will be exceeded, so that tourists no longer derive the expected benefits.

Large-scale concentration of tourists can also have major consequences for sanitation and the economy.

In southern Europe tourism increases during the hot season, when surface water levels are low. Pollution is therefore twice as heavy and waste water must be given even more intensive treatment to protect the environment for bathing, fishing, shellfish growing, aquaculture, etc.

### 2.2 Special problems of water supply

Water can be economized without forgetting that a safe and plentiful supply must always be available, by means such as:

- installing self-closing taps in camping grounds and public places;
- checking public systems and piping within buildings for leaks;
- using a separate system for watering lawns and gardens (reuse of treated waste water);
- applying water rates which favour economies in consumption.

A continuous flow must be ensured in public supplies, to avoid losses of pressure in large sections of the system, with an accompanying risk of pollution by intrusion of unsafe water.

Also, shut-offs encourage individual storage of water, which hinders management of the system and carries the risk of contamination of water in makeshift containers.

### 2.2.1 *Water resources*

Although groundwater supplies are preferable, surface water may also have to be used owing to problems in conveying water over long distances. Satisfactory supplies may be obtained by constructing elevated reservoirs or dams for storage of surface water with, however, accompanying risks of eutrophication and hence a need for full treatment of the water before it reaches the consumer.

As large loads are involved when using surface water (rivers, lakes, dams), a large treatment plant is required. An interdistrict association may be established for this purpose, serving not only the tourist area but also neighbouring communities.

It is important to bear in mind that water may deteriorate in piping and reservoirs during the high season (because of the temperature of surface supplies in the case of seaside resorts, with resulting instability) or the low season (because of small loads, risk of stagnation, corrosion of piping, etc.).

In certain cases (islands, arid coastal areas), water may be transported in barges or floating tanks drawn by boats.

### 2.2.2 *Treatment of drinking-water*

When a water supply or treatment system not operated outside the high season is brought back into service, there is a need for flushing, thorough checking of disinfection equipment and control of the water quality.

Conventional systems may be designed with modular components for:

- sand filtration;
- flocculation, sedimentation (tubular or lamellor tanks).

More effective treatment can be obtained using highly active flocculants: the operating costs may be higher, but they are used for only a short period in the year and in general this approach is more economical than increasing the size of the system.

It is important to determine the reservoir capacity necessary to ensure that adequate supplies are available at peak periods, i.e., at weekends or during holidays or for special purposes (fire-fighting).

Systems should not have excess capacity as the water may stagnate and deteriorate when demand is low. For tourist housing developments or premises occupied during the summer small-diameter systems may be used, with pressurized tanks. This is, however, feasible only in new pressure-resistant systems, and reducing valves must be installed in piping within buildings. Maintenance and careful supervision of the system must be ensured.

Where supplies are chlorinated, regular checks should be carried out to ensure that there is residual chlorine in all parts of the system.

### 2.2.3 *Public health surveillance*

The following points should be noted with regard to standards set by authorities for assessing the effectiveness of treatment systems.

- The collection of materials for testing required in setting standards poses difficulties which can be overcome by expanding the scope of the sampling in space and time.
- The choice of organisms to be used as indices of microbiological pollution is a matter of crucial importance.

For the public health officer there is no ideal indicator. The organisms used as indices of faecal pollution, especially by coliforms, generally furnish significant evidence, but they can be ineffective for this purpose since:

- (a) each organism exhibits specific forms of resistance in the environment;
- (b) there is no systematic correlation between the indicator organisms and the pathogens which are of interest to the epidemiologist.

The public health surveillance services should have adequate resources to discharge their responsibilities and avoid any interruption of the control due to staff shortages. Refusals to accept inspection can be overcome by appropriate administrative pressure.

Epidemiological surveys should be carried out as a general practice in tourist areas, despite the inherent difficulties of any recording in a migrant population. Further training in epidemiology should be given to surveillance services for this purpose.

## 2.3 *Special problems of sanitation*

Particular difficulties are faced in southern Europe due to the fact that large numbers of tourists must be accommodated during the hot season, when water levels are low in rivers and lakes. If these are used for recreation (or if a river mouth is near a beach), the water requires thorough purification and tertiary treatment (chlorination, ozonization or stabilization).

### 2.3.1 *Disposal of liquid wastes*

The loads vary considerably but in many cases are lower than in non-tourist areas. Peaks are sharper and increases in the particle content of effluent have been observed, due to changes in food habits.

To avoid reductions in the rate of flow, the production of sulfur and odours and anaerobiosis, which hinder treatment, sewer systems should not be constructed with excess capacity.

Reaerators should be installed throughout the system and at the treatment plant inlet.

Where sewers have to be laid along beaches, it is important to ensure that they do not overflow and pollute bathing places when the pumping equipment breaks down.

Waste water may be conveyed in parallel sewer systems, operated according to actual needs.

### 2.3.2 Discharge

Although, regrettably, sewage is often discharged into the sea in coastal areas, other approaches may be envisaged depending on the local situation. These include:

- watering of gardens and agricultural land through underground piping, subject to compliance with the normal public health regulations, i.e., prohibition of watering of vegetables or fruit that may be eaten raw;
- transport of sewage inland for treatment and discharge into rivers.

(a) *Marine discharge.* The marine environment must first be studied. Further discharge into the Mediterranean, which is already highly polluted, should be avoided. Most of the suspended substances, floating matter, oil and grease should be removed from the sewage before discharge.

(b) *Discharge into lakes.* To protect fish and shellfish culture waters, communities in the catchment area must have facilities for purification and/or tertiary treatment in stabilization ponds to remove pathogenic bacteria and viruses from the sewage.

In mountain areas sewage is often discharged into lakes, which are very fragile ecologically. In wastes treatment it is important to bear in mind the serious risk of eutrophication in this environment.

### 2.3.3 Treatment of wastes

Experience shows that the activated sludge process is not always effective for biological treatment of wastes in densely populated tourist areas.

On the other hand, physicochemical treatment or stabilization are worthwhile approaches. Lagooning can be used as the only form of treatment or as a tertiary process.

### 2.3.4 *Disposal of solid wastes*

Household refuse should be removed at frequent intervals, preferably daily. In mountain areas the receptacles (dustbins or containers) should be protected from snow and frost.

Solid wastes, especially if they are not biodegradable, should not be discharged into the sea.

Refuse collected from beaches should not be discharged nearby, but be removed for treatment in plants with other wastes.

## 2.4 **Management of technical services**

Wherever possible, it is desirable to group communities engaged in different activities (tourism, agriculture, industry), in order to reduce operating costs by pooling the equipment and staff.

Systems should be designed with modular components and be constructed in stages, to allow phased financing and adjustment to the needs.

Systems must be operated efficiently and intensively if full use is to be made of the available capacity. The costs thereby incurred are generally lower than those of systems with excess capacity. Spare parts must be available as lengthy interruptions of service due to breakdowns can have serious health consequences.

### 2.4.1 *Financing and operation*

Sanitation services (water supply, treatment of liquid and solid wastes) require sound financing. Arrangements vary from country to country and may or may not involve direct contributions by tourists.

In Switzerland, for instance, construction of sanitation systems in resorts may be financed from:

- income tax;
- rates;
- construction taxes;
- loans;
- subsidies.

When a new resort is being built, it is preferable to require developers of accommodation (hotels, rental apartments, chalets) to pay at the outset an amount for sewage and refuse disposal corresponding to the capital costs involved. At the construction stage, the developer has considerable funds available and is therefore able to make the full payment immediately.

In existing resorts, lump-sum charges cannot be levied at the construction stage and would cause unnecessary financial problems for owners. In such cases it is preferable to raise a loan for the purpose and cover all costs (amortization, interest, operations) from an annual rate.

Generally speaking, it is important to achieve an optimum ratio of capital to operating costs while keeping the former to a minimum as the latter are incurred for a few months only.

#### 2.4.2 *Inspection*

Inspection should be stricter in tourist areas than in normal communities. Inspection with sampling and testing should be carried out just before the start of the season, as soon as facilities are brought back into service. The frequency of the quality control of drinking-water should be determined according to the total population of the area, on the basis established by WHO.

### 2.5 **Training and information**

#### 2.5.1 *Training of engineers*

Information on epidemiology (especially in relation to waterborne diseases), and on bacteriology and virology, as provided in the training of sanitary engineers, should be given to all engineers responsible for the design or supervision of water and sanitation services, through accelerated courses or in handbooks.

#### 2.5.2 *Training of technicians*

Sanitary engineers and medical officers should take steps to inform auxiliary (and sometimes seasonal) workers about epidemiological hazards.

#### 2.5.3 *Exchange of information among developers and technical specialists*

Central authorities, local authorities in tourist areas, or developers should consult sanitary engineers and public health officers before deciding on types of equipment to install (drinking-water, waste water, household refuse, sanitary facilities of a site, etc.). The guiding principle should be protection of the health of tourists, and it is therefore important not to stint on capital investment. The French Ministry of Culture and the Environment has issued a brochure on suitable approaches in this respect, for the use of officials responsible for environmental quality in mountain areas.

#### 2.5.4 *Information of tourists*

(a) *European Region.* At this level information should be supplied on epidemiological hazards in host countries and suitable preventive measures apart from compulsory vaccination (e.g., chemoprophylaxis for malaria).

It may be useful to remind tourists of the basic rules of hygiene and to draw their attention to the problems of wastes disposal (a discarded tin may serve as a breeding place for mosquitos).

(b) *Receiving countries.* Countries receiving tourists must give visitors accurate information about local hazards (e.g., poor organoleptic quality of water, danger of schistosomiasis in rivers infested with snail vectors, etc.), while reassuring them that water supplies are bacteriologically safe.

### 3. CONCLUSIONS

1. In spite of earlier WHO recommendations on the subject, overcrowding, lack of facilities and unsatisfactory maintenance of sanitation systems, which frequently occur in camping grounds and premises sublet to tourists, are still major public health problems.
2. Above an occupancy limit, which remains difficult to determine, it may be impossible to ensure acceptable sanitary conditions in tourist establishments during the high season.
3. Sanitation facilities in tourist areas should be designed according to specific technical criteria, taking into account the effects of the seasonal population on the environment and climatic conditions. As the facilities are used only a few months a year, systems with high operating costs are preferable to those requiring major capital outlay.
4. Through appropriate financial arrangements (which in many cases must still be set up), it should be possible to use income from international tourism to amortize the operating and capital costs of health services (including water supply and sanitation) and even the costs of controlling culicine mosquitos or other nuisances in tourist areas.
5. Environmental protection of tourist areas is not only a responsibility of receiving countries but also a matter of concern for the home countries of the tourists who visit them regularly.
6. Development plans with detailed environmental health provisions should be drawn up for new tourist establishments, together with plans for renovation or provision of facilities in existing substandard establishments.
7. Industrial and transport activities giving rise to hazards, odours, noise and pollution should be strictly controlled in areas where tourism is highly developed.
8. The conclusions of the experts from mountain resorts attending the meeting, as stated in section 1.8 of the report are endorsed.

## 4. RECOMMENDATIONS

### 4.1 Member States of the European Region

(a) Member States of the Region engaged in tourism should speed up the implementation of WHO's recommendations on tourist health, including those of the present meeting.

(b) Tourists should be given information, before departure in the home country and on arrival in the receiving country, concerning:

- precautions to be taken under local conditions (sun, dangers of particular beaches or mountain areas, food hygiene, etc.);
- requirements related to geographical conditions and the influx of tourists (avoiding wastage of water, maintaining cleanliness in public places).

This information could be summarized in a "tourist health code" giving both general recommendations and specific recommendations taking into account the existing regulations and customs in the home and the receiving country.

(c) The training of sanitary and other engineers and sanitarians should be geared to the real needs, especially in receiving countries.

The training of civil engineers should include at least an introduction to the problems of environmental health.

The training of sanitary engineers should include adequate instruction in epidemiology and disease prevention.

(d) Member States of the Region should continue to exchange information on tourist health, as recommended by the Working Group on the Public Health Aspects of Tourism (Torremolinos, 1973).

(e) In tourist areas, stronger regulations are needed to allow progressively strict control of water for consumption or bathing, as the use of resources and the environment increases.

In providing additional resources for such control, it should be borne in mind that the tourist season in coastal areas usually coincides with the period of health staff vacations.

The regulations should include provisions for equipment and optimum operation of wastes treatment systems.

(f) Reuse of suitably treated wastes in agriculture or industry (allowing for epidemiological hazards) should be encouraged whenever there is a likelihood that plentiful supplies of safe water cannot be assured in tourist areas.

(g) The absorption capacity of the environment must be respected. Tourist areas must be developed according to plans taking the different economic, ecological and human factors into account.

Unplanned development of tourist areas, including unauthorized camping grounds, should be brought under control by introducing development schemes of sufficient flexibility to allow "nomadic" tourism of this kind.

(h) Member States of the Region should consider adopting coordinated policies to stagger vacations and promote new tourist areas, inland for instance, so as to avoid excessive concentrations of tourists in confined coastal or mountain areas.

## 4.2 Local communities and municipal authorities

(a) Local communities and municipal authorities should give tourists all available information, supplemented if necessary by advice related more specifically to the local conditions.

(b) Numbers of tourists should be recorded as accurately as possible. Dissuasive measures (inspections, fines) should be taken if accommodation capacities are exceeded, as is often the case in camping grounds. Organizers of the latter should be given the necessary information, drawing particular attention to the dangers of overcrowding. Such steps could lead to the establishment of agreements, allowing effective inspection.

(c) The charges for community services (water supply, sanitation, refuse collection) should be apportioned, so that tourists meet the additional capital and operating costs due to their presence.

(d) In the selection of systems and the framing of local regulations, allowance should be made for special needs arising from large and rapid fluctuations in population, particularly in the operation of facilities for water supply, sewage treatment and the disposal of solid wastes. It is also important to make suitable provision for overloading of the facilities and the assignment of additional staff.

(e) Insofar as many difficulties are due to seasonal peak demands, provisional agreements should be made between districts with complementary activities (e.g., a coastal resort, an inland village, a ski resort, a village in a valley), for optimum technical and economic effectiveness.

(f) When tourist areas are set up or developed on the initiative of local communities, the recommendations under 4.1. (g) are applicable.

### 4.3 Health services

(a) During the tourist season, strict health surveillance is required for all facilities: camping grounds, swimming pools (covered or open), bathing places. Such surveillance should be strengthened by increasing the frequency of inspections and the numbers of qualified staff made available for the purpose; it should include assessment of water and wastes treatment plants, and quality of surface water. At the beginning and end of the season, the health services should encourage local authorities to clean out systems and check their functioning.

(b) Monitoring of environmental conditions should be organized, allowing for special needs during the tourist season, e.g., road congestion may require transport of the sick and seriously injured by helicopter.

(c) Very strict health surveillance is required at all stages in the preparation and distribution of food.

(d) Public health officers, sanitary engineers, university researchers, town planners, ecologists and urban administrators should cooperate in seeking adequate technical solutions to the specific problems of environmental health in tourist areas.

(e) The need for border health control of tourists and domestic animals should not be overlooked, despite the practical difficulties involved.

### 4.4 Planners and operators of systems

(a) Before any tourist development is undertaken, a thorough survey should be carried out in similar areas, to determine water needs, study the production of liquid and solid wastes, etc. This applies especially to camping grounds (as location and climate strongly influence demand), where a plentiful supply of safe water must be available to all.

(b) The preliminary survey must cover the different water resources, giving initial preference to groundwater.

(c) To ensure that sanitation services in tourist areas are as cost-effective as possible, the authorities should develop approaches suited to the local conditions, including: reuse of treated wastes in agriculture or industry, reduction of waste water flow in sewer systems, selective wastes collection.

(d) At all levels of responsibility, action should be taken (provision of suitable equipment and qualified staff) to ensure the maintenance and proper functioning of all facilities (including hotels and restaurants) and to meet the needs of tourists.

#### 4.5 World Health Organization

- (a) The WHO Regional Office for Europe should ensure wide distribution of the *Guide pratique d'hygiène du tourisme* and the final report of the present meeting to all countries of the Region and to developing countries engaged in tourism.
- (b) A meeting should be convened in five years' time to review the situation and assess the implementation of the recommended measures.
- (c) Encouragement should be given for launching or developing programmes of studies and research on the relationship between water quality in bathing places and morbidity, as is already being done in respect of Mediterranean beaches under the WHO/UNEP project on coastal water quality control in the Mediterranean (MED VII).
- (d) Regular supplements to the *Guide pratique* should be issued, giving updated information on the development of planning and operational approaches for reuse of purified effluent and disposal of wastes, especially those allowing for wide fluctuations in population.
- (e) In view of the special conditions and difficulties associated with water supply and disposal of liquid and solid wastes in tourist areas, and bearing in mind the recent development of techniques for these purposes, WHO might usefully convene a working group to study detailed recommendations complementary to the *Guide pratique*, which would be of guidance to health workers and urban administrators in selecting appropriate methods.

#### 4.6 Institute of Regional Development and the Environment, Montpellier

The Institute should issue a full record of the present meeting.

## Annex I

### WORKING DOCUMENTS AND PERSONAL COMMUNICATIONS

#### *Working documents*

- ICP/BSM 001(1)/6      Hygiène du tourisme – M. E. Giroult
- ICP/BSM 001(1)/7      Problèmes de salubrité de l'environnement dans les stations touristiques de montagne, en particulier les stations de sports d'hiver – Professeur Y. Maystre
- ICP/BSM 001(1)/8      Problèmes particuliers d'évacuation et de traitement des déchets liquides et solides dans les localités touristiques résultant des fortes fluctuations saisonnières de la population – Dr R. Mujeriego
- ICP/BSM 001(1)/9      Problèmes particuliers de gestion des ressources en eau dans les localités touristiques où la période de consommation de pointe coïncide avec la saison sèche – M. V. de Proost
- ICP/BSM 001(1)/10      Problèmes écologiques résultant d'activités économiques diverses dans les zones touristiques, en particulier l'ostréiculture et la pisciculture – Dr L. Landner
- ICP/BSM 001(1)/11      Problèmes de gestion des services techniques liés dans les localités touristiques aux fortes fluctuations saisonnières de la population – Professeur R. Geric

#### *Personal communications*

Impact des variations saisonnières de population sur la distribution d'eau potable – M. Pietri

Modifications techniques nécessaires dans les réseaux et dispositions particulières pour la surveillance hygiénique – M. Hedon

Dispositions particulières pour la surveillance hygiénique – Professeur R. Baylet et M. G. Courtois

Problèmes techniques et hygiéniques dans la distribution d'eau potable résultant de très fortes variations saisonnières de population – Dr N. Sarti

Rapport – M. Girardot

Impact des variations saisonnières de population sur l'évacuation et le traitement des déchets liquides et solides – M. Gervais de Rouville

Traitement des effluents par lagunage – M. Gervais

Rapport – M. J. Bebin

Quelques-uns des problèmes posés aux collectivités locales dans les régions à impact touristique : le littoral languedocien – Professeur Pietrasanta

Problèmes posés par la gestion des services publics dans les localités touristiques – M. Ph. Rousselle

Rapport – M. Baguenier

Sur quelques aspects du problème des ressources en eau dans les zones touristiques saisonnières – Professeur J. Avias

L'homme et les milieux humides. Un indicateur : le moustique – Dr J. Cousserans

Ecologie et pollution des étangs littoraux. Application aux étangs du Languedoc Roussillon – Professeur M. Amanieu

La salubrité de l'environnement dans les zones touristiques du littoral du Languedoc – M. R. Ringuelet

Rapport – M. A. Yana

Contraintes techniques et diffusion de l'information – M. G. Castaigneau

Elimination des eaux usées et des déchets solides des stations touristiques de montagne – Professeur Y. Maystre

Rapport – M. G. Cumin

## Annex II

### PUBLICATIONS AND REPORTS ON THE SUBJECT

*Guidelines for health-related monitoring of coastal water quality*: report of a Group of Experts jointly convened by WHO and UNEP. Copenhagen, WHO Regional Office for Europe, 1977 (ICP/RCE 206(4)).

*Guidelines and criteria on quality of beaches and recreational coastal waters*: report of a Group of Experts jointly convened by WHO and UNEP. Copenhagen, WHO Regional Office for Europe, 1977.

*Guide pratique d'hygiène du tourisme*. Copenhagen, WHO Regional Office for Europe, 1978 (Public Health in Europe, No. 9).

*Health criteria and epidemiological studies related to coastal water pollution*: report of a Group of Experts jointly convened by WHO and UNEP. Copenhagen, WHO Regional Office for Europe, 1977.

WHO Technical Report Series, No. 550, 1974 (*Fish and shellfish hygiene*).

**Salvato, J.A.** *Guide to sanitation in tourist establishments*. Geneva, WHO, 1976.

**Wood, P.C.** *Guide to shellfish hygiene*. Geneva, WHO, 1976 (Offset Publication No. 31).

## Annex III

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1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in the context of public administration and government operations. The text notes that without reliable records, it becomes difficult to track the flow of funds, assess performance, and identify areas for improvement.

2. The second part of the document outlines the various methods and tools used for data collection and analysis. It highlights the need for standardized procedures to ensure consistency and reliability of the data. The text also discusses the challenges associated with data management, such as ensuring data security, maintaining data integrity, and addressing issues of data quality. The author suggests that investing in modern data management systems and training personnel can significantly enhance the efficiency and effectiveness of data collection and analysis.

3. The third part of the document focuses on the application of the collected data. It describes how the data is used to inform decision-making, monitor progress, and evaluate the impact of various programs and initiatives. The text stresses that data-driven insights are crucial for identifying trends, spotting potential risks, and developing evidence-based strategies. The author also mentions the importance of regular communication and reporting to stakeholders to ensure that the data is being used effectively to drive positive change.

4. The final part of the document provides a summary of the key findings and recommendations. It reiterates the importance of a robust data management system and the need for ongoing monitoring and evaluation. The author concludes by stating that while there are challenges, the benefits of a well-implemented data management system far outweigh the costs, and it is essential for any organization committed to transparency and accountability.