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Cover: Urban landscape, Dhaka
Credit: Bob Linney/Mark Edwards Still Pictures

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centre pages

This issue of *Waterlines* contains the fifty-fourth in a series of Technical Briefs (**No 54: Emptying a full pit latrine**) which provide clear and simple introductions to topics of day-to-day interest to fieldworkers and local communities. The first series of Technical Briefs is available in book-form. *The Worth of Water: Technical briefs on health, water and sanitation* (ISBN 1 85339 071 2), is available at £10.95 plus £2.50 post and packing from IT Publications, 103-105 Southampton Row, London WC1B 4HH, UK.

contributions

Waterlines welcomes written contributions. If you have information you feel would be of value and interest to other readers, send us your manuscript. Manuscripts should be less than 2000 words long. Photographs and illustrations are very important, and should be black-and-white and captioned. The editor regrets that no responsibility can be accepted for the return of the original manuscript or illustrations. Where opinions are expressed in *Waterlines* they are those of the authors and not necessarily those of the Intermediate Technology Development Group. Where technical articles and advertisements from outside sources are published, the details, effectiveness, and data on which they are based are assumed to be correct and are taken on good faith to be so.

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Urban environmental health — Fitting the pieces together

by Pete Kolsky

The cities of the South are growing rapidly — so are the health problems of their poorer inhabitants. What can be done to reduce urban environmental health hazards — and who should do it?

THIS ISSUE OF *Waterlines* looks at the problems of urban environmental health from a number of different angles. As Robert Chambers[1] and others have pointed out, there is an inherent bias in development towards 'city' projects, if for no other reason than that cities are where we find governments and airports. Many of these projects are inappropriate, and those struggling in rural areas may rightly feel that too much attention is given to the cities, where wealth and power are already concentrated. So why should *Waterlines* look at health in cities?

Cities are where people live. An increasing proportion of us are living in cities and towns: by 2000, 200 million people will live in the towns and cities of the South. There are many gross stereotypes about the nature of this urban growth, and the bogeyman of the 'megacity' is open to question. But the sheer numbers involved mean we need

to understand the health problems and solutions associated with this shift from rural to urban life.

Many city-dwellers have poor health. While wealth and power are concentrated in cities, they are by no means evenly shared. Harpham[2], Stephens[3] and others have documented clearly the difference in health between rich and poor; the urban poor are very vulnerable to a variety of health problems, varying from 'traditional' infectious diseases like tuberculosis and diarrhoea to more 'modern' problems of heart disease and violence. While health statistics for the city as a whole may be better than those of the countryside, this does not mean that the poor in the city are healthier than their rural counterparts.

Cities are 'disease-friendly'. Many urban health problems are related to the higher population density. In traditional public health terms, risks of epidemics and infectious-disease transmission are always greater where people are crowded together; it is easier for infectious agents to pass between people in cities. Rural sanitation is likely to be a lower priority in health terms than urban sanitation, simply because more people are put at risk from unmanaged urban waste.

On a more positive note, higher densities make some problems easier to solve. Supplying water to 100 000 people living in one city is often easier and cheaper to organize than doing the same for 500 scattered villages of 200 people each. Urban services such as water supply are often more 'sustainable' in the technical sense of continued operation, because the system is concentrated in a smaller area, and specialized skills, such as pump repair or accounting are more easily managed.

Rings of the city

One way to think about the city is as a series of rings, centred on the home, leading out to the wider 'environment', illustrated in Figure 1.

The home is the central environmental focus for most people; it is their most immediate environment', where they spend a lot of time, and over which they have some control. For most city-dwellers, keeping their home as clean and healthy as possible is a high priority.

Spaces shared with people outside the family group are the next priority: lanes, courtyards, workplaces, schools, and similar 'environments' shared by a small but well-defined group of households or individuals. Once the home environment is well-managed, this 'peri-domestic environment' becomes a priority for improved cleanliness and better waste management. Few people, however, can be expected to take much interest in improving the street or neighbourhood until their own home domain is under control.

The next ring shows 'wards' or communities, made up of a number of streets, lanes and neighbourhoods. Once environmental conditions at the household and peri-domestic level improve, people can start to care more about the cleanliness of these larger units. In the same way, concern for the environment of other communities in the city can increase once the local community has improved. Finally, there are city-wide responsibilities. The whole city has a responsibility for the river which passes through it, and for those who are affected by the city's waste products. Similarly, treating river water before drinking is often viewed as a city-level responsibility.

These rings represent an approximate ranking of environmental concern from the point of view of the individual. The boundaries between levels are not always precise, and the priorities are not always strictly in the sequence shown, but the concept of these rings can be a helpful starting point for thinking about the urban environment.

Rings of health

Figure 1 also reflects environmental priorities from the public health point of view. In these terms, the most important task of environmental management is to create conditions in which the home environment is safe. Young children are the most susceptible to diarrhoea, worms, and many other environmental health hazards; by far the greatest toll of sickness and death from environmental causes occur in children under the age of five. This group — like the other vulnerable group, the elderly — spends most of its time in or near the home, making this environ-

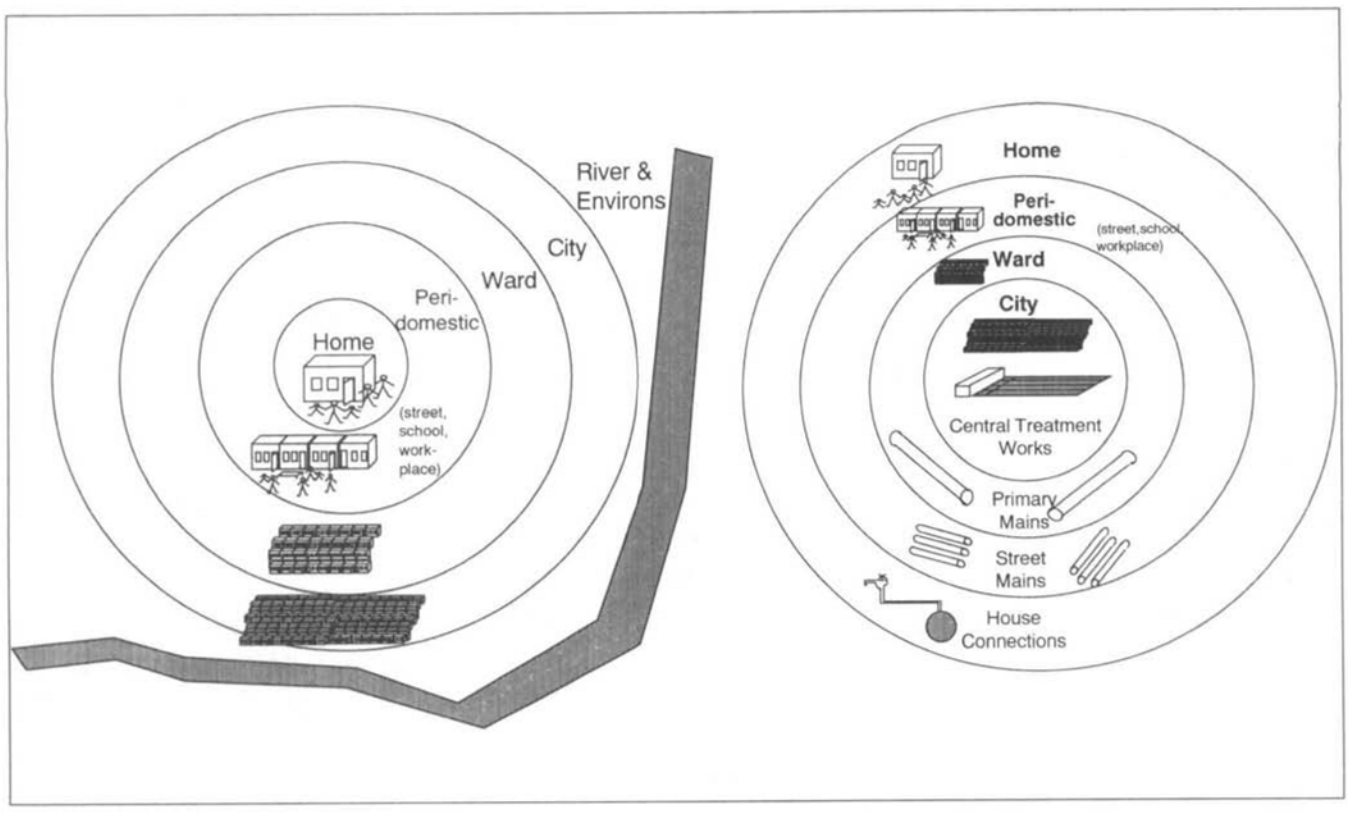


Figure 1: Environmental rings of a city

Figure 2: A water-supply engineer's view of the city

ment the most significant for health.

The public health priority of waste management decreases as one moves further away from the home; the courtyards and streets are the next highest priority, then the more centralized collection facilities, and finally the more remote portions of the waste management system. As waste moves outward from the home, the occupational health of those who manage the waste must always be considered, as their exposure is far greater than that of the public at large. But, for the majority, the greater risks are closer to home.

Service provision

Not everyone looks at cities in this way, nor should they. Technical professionals will rightly point out that effective centralized facilities are often needed to meet the public health goal of 'creating conditions in which the home environment is safe'. Figure 2 shows how a city water supply engineer may look at the rings of Figure 1.

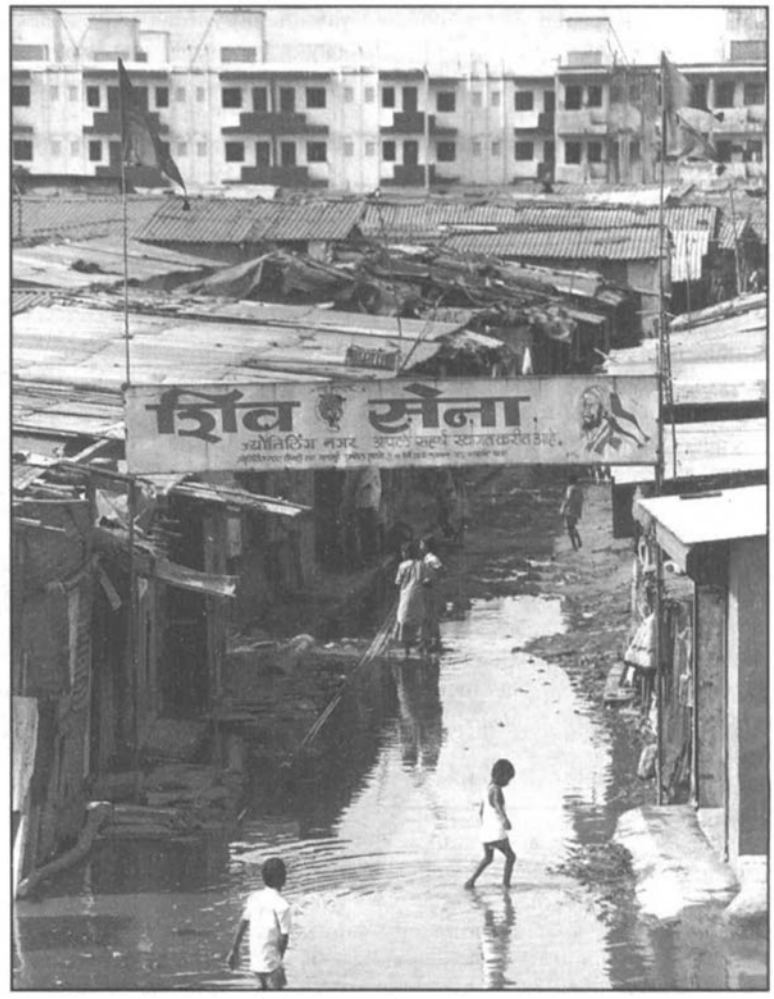
Many urban water supplies have only a single water-treatment works, which is critical to ensure the water quality of hundreds of thousands of individual households. From a technical manager's point of view, the central pumping and treatment works may be the most critical, because they will affect everyone if they fail. The primary distribution mains are the next most important, because large chunks of the city depend upon them. To the water-supply engineer, the failure of an individual house connection, while regrettable is, in some sense, the least of his or her worries.

There is much practical truth in Figure 2. Urban environmental services like water supply, drainage, and solid-waste management are long chains, which are often only as strong as their weakest links. There is still truth in Figure 1, however, and the danger of viewing the city from only one of these perspectives is that we can all too easily lose sight of the 'outer ring.' This helps to explain some of the unease in interactions between government, NGO, private, and individual perspectives on environmental health services.

Whose responsibility?

Many city by-laws are written on a simple premise: the individual is responsible for maintaining a healthy environment within the household, but at the street level and beyond, environmental matters are a government responsibility. (Where households create a hazard or nuisance for others, the city government can force the individual to act, in other words, the individual is still held responsible.) This relationship is most clearly shown for those who enjoy the luxury of private connections to a public water supply and sewerage system. Between the river and the street, the city (or the recognized private utility) must maintain the system, but within the home, the householder must maintain the plumbing. Everything beyond the household is part of the 'public' environment, to be financed through public funds.

This arrangement has many merits, and has served many cities well, particularly where raising public funds is relatively easy. It has not always served the poor very well, however, and has created a massive expectation of public services that cannot be met in the current political and economic climate. Regardless of our individual political beliefs, the poor will wait a very long time if their only hope for water supply and sanitation is from government provision.



Mark Edwards/Still Pictures

'Between the river and the street, the city must maintain the system' — a Bombay slum.

Articles in this issue

Many features in this issue span the various rings of the city. At the home level, Val Curtis, Prabhakar Sinha and Shyamoli Singh reflect on those critical individual decisions and choices made every day in households throughout the world that determine much of the health of our children. How can we learn about household perspectives on hygiene, especially for children? How can we use this understanding to market changes in hygiene and sanitation? What interventions can most effectively promote hygiene in the home? While many aspects of environmental interventions differ between urban and rural areas,

In the New Year issue of Waterlines

In a special 'Water policy and strategy' issue, *Waterlines* addresses the problems of policy implementation — the difference between great ideas and pronouncements and the reality of trying to make them work. All too often, policymakers and implementers have widely diverging agendas and expectations — how can communication be improved? Jon Lane of WaterAid provides the overview; Peter Howsam and Richard Carter of Silsoe College examine the role of water law/rights in community water supply and sanitation policy and provision; and there are case studies from Lesotho, Malawi, El Salvador, Uganda, Ethiopia and Tibet.

surely the need to understand individual and community-level perceptions of hygiene remains the same. The principles for increasing our understanding, as described in this article and elsewhere,[4] are the same, even if their application in rural and urban areas will vary in response to the setting.

Moving beyond the home, the Orangi Pilot Project (OPP), described on page 27, has succeeded in working with householders at the street or lane level to solve environmental health problems through low-cost sewerage, with minimal dependence on over-stretched local government. The OPP is quite clear about the boundaries of responsibility between NGOs and urban government; they are not attempting to solve the problems of the centralized trunk mains or sewage works, but are trying to ensure the provision of services at street and household levels that municipal government appears incapable of providing.

On page 24 Andrew Cotton and Muhammad Sohail look at community involvement at the street and ward levels in urban infrastructure in a different way. If a government project plans to improve the roads and drains of a community, why is 'community participation' restricted to consultation before and cost-recovery after? Why pay outsiders to build the drains for a poor community, when community members themselves can often be contracted? The practical benefits of such an approach can include both a better quality of work, and a more effective targeting of funds to the poor of the community.

At the ward or community level, Diana Mitlin and colleagues look at the tricky issue of the interplay between community needs and capacities, and city-government responsibilities. This article describes graphically why the poor cannot always wait for the 'city professionals' to provide the needed services, and how their creativity and energy can often find solutions where none were visible to the government.

An important lesson is becoming painfully apparent in the current climate of privatization and the shrinking state. Where government shifts from service provision to facilitation, it is entirely appropriate that it grow smaller in size and budget. The great danger is that it will also become weaker, precisely in the setting where it needs to be strongest. To a greater or lesser degree, city governments are accountable to their citizens, and to all of their citizens, in a way that the private sector, and even NGOs, are not. As the OPP has always recognized, a central co-ordination function is essential if one community's 'solution' is not to become another community's problem. Individuals cannot perform this role of co-ordination and regulation, and nor can private companies or NGOs; if they attempt it, they must do it under some form of governmental supervision to ensure wider public accountability.

The article on malaria control in Surat City illustrates this point, as city engineers and public health workers grapple with the development of effective technical and institutional means to make Surat 'malaria-unfriendly'. These municipal staff recognize that everyone has a role to play in reducing the urban malaria hazard in their city, from householders, to builders, engineers and architects. As city-wide municipal workers, they know they have a responsibility to inform others of the problems, and to enforce suitable regulations to protect public health on the building sites where malaria breeds.

The big challenge in urban environmental health has always been to operate effectively in all the rings of the city. Each of the players needs to learn how best to work with the others: this is true for municipal public health workers (including engineers), members of NGOs and CBOs, private sector entrepreneurs, and individual householders. There are as yet no clear universal answers as people struggle to fill the vacuum of services which cannot be provided by the state. The articles in this issue offer some promising leads, but we need to learn much more by trying different ways of working together to span the needs of the city. Geoffrey Rose, in summarizing the practical and moral wisdom of public health[5] felt that Dostoevsky said it best: 'We are all responsible for all.'

Notes and references

1. Chambers, Robert, (1983). *Rural Development: Putting the last first.* Longman, Harlow.
2. Harpham T. et al (ed.) (1988). *In the Shadow of the City: Community health and the urban poor.*. OUP, Oxford.
3. Stephens, C. (1996) 'Research in urban environmental health', in *Urban Health Research in Developing Countries: Implications for Policy.*. CAB International, Wallingford.
4. Almedom, A. et al., (1997). *Hygiene Evaluation Procedures: Approaches and methods for assessing water- and sanitation-related hygiene practices.* INFDC, Boston, 1997.
5. Rose, G, (1992). *The Strategy of Preventive Medicine.* Oxford Medical Publications, Oxford.

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Ron Giling/Panos Pictures

Unfinished — but already occupied — homes for some of India's growing urban population.