Making a Difference:

Indicators to Improve Children's Environmental Health

WORLD HEALTH ORGANIZATION
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Indicators to Improve Children's Environmental Health

Prepared on behalf of the World Health Organization

by

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PREFACE

Over the last ten years considerable effort has been devoted to developing environmental health indicators to support policy. In only a few cases, however, can the material effects of these indicators, in terms of reduced health inequalities or mortality rates, be seen. In many cases, this is because the problems are intractable and complex. Long latency times mean that it will take many years for the effects of interventions to become detectable. In other cases, it is because the indicators themselves have not been especially relevant or applicable.

Recognition is now growing that our first priority should be the very young, not only because they are often the most vulnerable and least able to help themselves, but also because it is often the events that happen in the early years that shape the rest of their lives. Early intervention can thus have lifelong benefits.

Early intervention, however, requires rapid recognition of what needs to be done, followed by quick and targeted action. In this context the need for effective indicators becomes all the more acute. The purpose of this report is to lay the foundation for developing and implementing these indicators as a basis for priority setting and action.

The report does two things. It discusses and describes some of the principles that need to be considered in developing effective environmental health indicators for children. It then applies these to produce a set of indicators, targeted at the main disease burdens that affect children globally (CD-ROM).

The indicators presented here are intended to serve several purposes. Amongst others, these include:

- providing a basis for assessing environmental risks to children's health, in order to help prioritize policy at national and global level;
- acting as a basis for monitoring and evaluating the effectiveness of national and international initiatives to reduce environmental health risks for children;
- providing a template for developing other indicators as needed to address issues of specific local or national concern.

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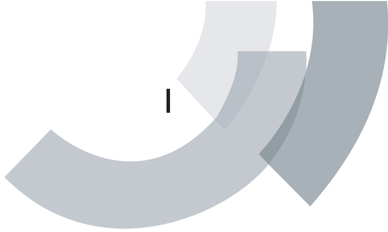

1. INTRODUCTION

Who are children?

Age is clearly the defining characteristic that separates children from adults. Defining children in terms of their age, however, poses major problems, and different definitions have been adopted by different countries and international agencies. The WHO's Department of Child and Adolesecent Health and Development defines children as under 20 years of age. The Convention on the Rights of the Child defines them as under 18 years of age.

In reality, no simple definition by age will suit every circumstance. As children grow and mature, they change dramatically — and so do their patterns of risk. Even children of the same age and gender may vary enormously in terms of their physical characteristics, cognition and behaviours, depending on their circumstances and fortunes. Differences in the way we treat and care for children in different cultural contexts, help to produce marked differences in the way children are seen, and see themselves, in different parts of the world.

In considering the threats to children, therefore, we need to be adaptive. We need to recognize that who is at risk varies from one place and one risk factor to another. In this context, we focus on children between the ages of 0 and 14, because it is at these ages that the risks tend to be greatest. For many indicators, however, we use an even narrower age band (0–4) since it is these who are often especially vulnerable.

1.1 Children in an adult world

Children, like other unempowered and vulnerable groups, are all too often the victims of the environment, and the way we manipulate it to serve our adult ends. They lose their lives more often in natural disasters, they are the innocent victims of war, they are more likely to be injured or maimed on the roads, and they are more frequently and severely afflicted by a wide range of respiratory, gastro-intestinal and vector-borne diseases. There is no ambiguity or area of debate in this. Data may often be lacking and in many countries (often those where the problems are worse) monitoring is far from adequate, but the numbers involved are such that any uncertainties matter little. Count them how we will, every year millions of children die, are disabled and endure suffering that could be avoided. Globally, children are leading impoverished and damaged, often grotesquely shortened, existences, and all because of the world in which they find themselves, because of their environment.

This vulnerability in the face of environmental, and associated social, threats is not solely a matter of diminutive stature or biological immaturity, nor even of their specific behaviours and unawareness of risk. It is also, fundamentally, because they are children in an adult world. It is because they are powerless to mould their own environment or command their own destiny — even to avoid the risks that confront them.

If children are to be better protected, therefore, they must rely on adults to shape a more benign and safer world for them. And if adults are to do this task effectively, they need to see the world through children's eyes, to recognize the threats faced by children, to understand the child's helplessness in the face of these threats, and to be more aware of the way their own adult decisions and actions impinge on that world.

This is no easy challenge. The ability to see the world through the eyes of others — even our former selves — is weakly developed, especially when the voice of those others is muted or silent. This voicelessness is a characteristic of almost all weak and vulnerable groups — not only children, but the elderly and poor alike. In the case of children, however, it is especially marked. Even in the best democracies, children (at least those under18 or so) have no vote; they control no newspapers or TV stations and command no budgets for advertising; they cannot organize protests or strikes; they cannot petition or challenge decision-makers in court. They depend wholly on the decisions and laws of adults, yet have no means of communicating their concerns to those who decide or of promoting their interests with them. And more often than not, of course, they cannot even grasp what these concerns or interests are.

1.2 The need for information

The voicelessness of children, at least in terms of the formal processes of politics and power, will not greatly change: children will not become decision-makers, policy-makers or lobbyists in their own right. If the threats to the lives and health of children are therefore to be properly addressed, decision-makers need other forms of help and guidance. They need clues to the issues that matter for children, an indication of the hazards and risks that need to be addressed; they need help in prioritizing and evaluating actions in relation to and on behalf of children in ways that put children first. They need clear, relevant, and unignorable information about the things that affect children's lives.

1.3 Indicators

One way of providing this information is through indicators. In recent years the use of indicators has grown rapidly in many different fields, including economics, environment and health. The extent to which the use of indicators has improved decisions and enhanced the world is, admittedly, a moot point. Certainly they are no panacea. Too often, they have been seen as an easy solution: a way of highlighting the problems that confront us and learning how to respond, without the cost or inconvenience of having to collect or analyze data, or really to understand. This is inadequate, for if indicators are to tell us anything, it is only because they are based upon reliable and often hard-won data, and are interpreted with sense and equally hard-won understanding. All too frequently, however, they merely provide decision-makers with the false assurance that they know what is happening and have done the right thing. At best this is neglectful. At worst it is deceitful, in that it represents a deliberate attempt to cover up realities and use information simply to promote self-interest.

In some cases, more positively, indicators are held up as warning signals to alert us to dangers that would otherwise not be foreseen. For the most part, however, this is likely to be more a hope than a reality. For indicators are only likely to be developed and used if we have already defined a need to know; and recognizing the need to know means that we are already alerted. Usually, therefore, indicators follow rather than precede awareness, providing answers to questions already posed. They allow an assessment and tracking of known issues but rarely offer a warning of new problems. Such questions about new concerns tend to emerge in other ways. Sometimes they are the result of obvious events — for example, outbreaks of disease or major catastrophes, detected not through formal indicators but through routine monitoring and management. Sometimes they arise from chance insights or observations of previously unnoticed patterns or associations — for example, apparent clusters of disease or connections between a putative hazard and a health effect. Quite commonly, they develop as a result of independent, exploratory science and research, either involving the collection of new data or through the analysis of data that already exist.

Indicators, however, can and sometimes do serve a number of important purposes. Constructed properly, founded on real understanding, based on good data and good science, they can be used to monitor situations that might affect us, or to track the effects of specific interventions. Once we have identified an issue, therefore, indicators can reassure or forewarn us; once we have tried to act, they can help us to judge our performance against the goals we hope to achieve. Similarly, they can be used to compare conditions or achievements in our own country or community with those of others. Thus, in the hands of empowered (and especially passionate) people, they can also be powerful symbols: they can be used as a way of highlighting issues and concerns, and of bringing these to the attention of those who need (but often do not want) to know.

Two uses of indicators thus stand out — they are instruments for lobbying and awareness raising, and they are tools for self-judgement and for assessing how well we perform. In the case of the health of children, both these applications are of utmost importance. The very persistence of threats and damage to children, often on an unforgivable scale, underlines the need to challenge those responsible (whether by commission or omission) unequivocally. The requirements for action — and, indeed, the wide range of actions already being taken, some to the benefit, but many to the detriment, of children — likewise demonstrate the need to be able to monitor and assess our actions in relation to children's welfare. The set of environmental health indicators developed here is meant to serve these needs.

What are indicators?

Indicators are signals for things that cannot be directly seen. They are based on data, but ideally add value to data by expressing them in a way which is more understandable and more relevant to the user.

It is often said that monitoring provides data, analysis of data provides statistics, and interpretation of statistics provides indicators that help to inform decision-makers.

Even so there is much confusion about what indicators are. Mistakenly, they are sometimes regarded as the *issues* that we need to address (e.g. indoor air pollution, respiratory health). Equally misleadingly, they are sometimes defined as the values that we obtain when we try to quantify these issues (e.g. 175ug/m^3 PM_{10}, or a respiratory mortality rate of 98.5 per 100 000 births). In practice they are neither. Indicators are about the things that lie between the two: they are the entities that we try to measure (e.g. mean annual PM_{10} concentration or mortality rate) to describe the issues that we are concerned about in a clear and understandable way.

That said, some confusion is inevitable, for there is no clear distinction between data, statistics and indicators. Child mortality rate, for example, can be any one of these things. What makes it an indicator in some situations is not the measure itself, but its purpose and the way it is used.

What are environmental health indicators?

Environmental health indicators have been defined as:

- *an expression of the link between environment and health, targeted at an issue of specific policy or management concern and presented in a form which facilitates interpretation for effective decision-making.*

Source: Corválan et al. 1996

2. DEFINING WHAT MATTERS

The global burden of disease

The Global Burden of Disease (GBD) represents the sum of life-limiting disease on the human population. The original assessments were made by Chris Murray and Alan Lopez, in 1996. In the original assessment of the GBD, the environmental contribution to the global burden of disease was deduced by attributing mortality and morbidity data to environmental causes, mainly on the basis of expert opinion, and by extrapolation from research studies. Since then, a more detailed analysis of the global burden of disease is being undertaken, which is attempting to assess the environmental contribution to the GBD from estimates of population exposures and exposure-response relationships (Ezzati et al. 2002).

Because the overall effect of illness and disability cannot realistically be assessed only in terms of the death rate, and because comparisons cannot easily be made between crude rates of morbidity (which may differ greatly in severity), the GBD is estimated in terms of disability-adjusted life years (DALYs). These are a measure of the years lost to either premature death or life-limiting disease.

No indicator tells us all we need to know: the world and what we need to know are both too complex for that. Nor can we develop indicators for everything. If we were to do so, the huge volume of information — much of it often contradictory and confused — would simply weaken rather than strengthen the message, and overwhelm those concerned. Or the indicators themselves would be so wide-ranging and general that any meaningful interpretation would be impossible. To be effective, information must always be selective: we must target the key issues and communicate concisely.

Selection is not easy. Children are subject to many different threats, and these vary depending on local circumstance and the vulnerability of those concerned. The range of potential issues of interest is therefore extremely large. In defining these issues, we also need to take account of both cause and effect. Not all health outcomes derive from the environment, but those that do can only be effectively addressed if we understand their environmental roots. Indeed, in terms of action and response, the focus should perhaps be on the environment rather than the health outcome: for while we can often reduce suffering by treating health outcomes, only by removing the exposures responsible for the disease can we avoid it entirely. This needs action far upstream of the health effect — for example, by intervening in the environmental processes, or the social and economic systems, that generate the hazard in the first place. By the same token, the fruits of intervention are often seen first in the environment, and only later — too late to ensure prevention — in the health of the population.

2.1 The burden of disease

By selecting, of course we also prioritize. The issues we select as the focus for our indicators, therefore, become the focus for our policy. How then should we select?

The most obvious way is in terms of the burden of disease. In this context, what matters most for children is incontrovertible. Global estimates of the burden of disease, derived from an analysis of national statistics and research studies (Figure 1), are already available. Both the data and the science behind these estimates are admittedly approximate, but such is the scale of illness in the world that approximations matter little. The major causes of death and illness — and thus the major focus of concern — are all too evident. They dominate the statistics. Though they can be categorized in different ways, five main groups demand attention:

- Perinatal diseases — including low birthweight, stillbirths and congenital malformations.
- Respiratory diseases — including pneumonia, , tuberculosis and asthma.
- Diarrhoeal diseases — including rotavirus infections, E. coli infections, and cholera.

预览已结束，完整报告链接和二

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