n the medical sense, the environment includes the surroundings, conditions or influences that affect an organism (Davis, 1989). Along these lines, Last (2001) defined the environment for the International Epidemiological Association as: "All that which is external to the human host. Can be divided into physical, biological, social, cultural, etc., any or all of which can influence health status of populations ...". According to this definition, the environment would include anything that is not genetic, although it could be argued that even genes are influenced by the environment in the short or long-term.

Figure 1 shows one way to represent the environment, from the most inclusive to the most restrictive definition (Smith, Corvalàn and Kjellström, 1999).

For the purposes of environmental health, however, a more practical definition of the environment is needed, because environmental health action generally tries to change only the natural and physical environments and related behaviours (e.g. hand washing). Such interventions can rarely modify the social and cultural aspects of a community, which are usually independent of the environment (e.g. cultural pressures on lifestyle, unemployment). As a result, a more practical definition of the environment might be that given in Box 1.
We can define 'environment' as "all the physical, chemical and biological factors external to the human host," as well as those factors impacting related behaviours.

**Box 1 A definition of "environment" for measuring the environmental impact on health**

The environment is all the physical, chemical and biological factors external to a person, and all the related behaviours.

This definition excludes behaviour not related to environment, as well as behaviour related to the social and cultural environment, and genetics.

For our analysis, we have limited the definition of environment further, to those parts of the environment that can be modified by short-term or longer-term interventions, so as to reduce the health impact of the environment (Box 2).

**Box 2 The definition of "environment" used in this study**

The environment is all the physical, chemical and biological factors external to the human host, and all related behaviours, but excluding those natural environments that cannot reasonably be modified.

This definition excludes behaviour not related to environment, as well as behaviour related to the social and cultural environment, genetics, and parts of the natural environment.

This definition thus aims to cover those parts of the environment that can be modified by environmental management. For onchocerciasis, for example, the definition of environment would include only that part of the environment that had been affected by man-made interventions (in this case, dams), and which could be modified by further intervention. Estimates of the environmental health impact would not include disease caused by vectors living in natural environments such as rivers, if those vectors could not be controled by reasonable environmental interventions. Similarly, deaths and injuries of soldiers during war is not included here, even though they could be considered occupational, because no intervention could possibly provide a safe working environment.

Our definition of "environment" is thus not all-inclusive in terms of the natural environment, and includes only those aspects that are modifiable (not necessarily immediately, but with solutions that are already available). Factors that have been included in our definition of "environment", or excluded, are given in Box 3.
Included environmental factors are the modifiable parts (or impacts) of:

- pollution of air, water, or soil with chemical or biological agents;
- UV and ionizing radiation\(^a\);
- noise, electromagnetic fields;
- occupational risks\(^b\);
- built environments, including housing, land use patterns, roads;
- agricultural methods, irrigation schemes;
- man-made climate change, ecosystem change;
- behaviour related to the availability of safe water and sanitation facilities, such as washing hands, and contaminating food with unsafe water or unclean hands.

Excluded environmental factors are:

- alcohol and tobacco consumption, drug abuse;
- diet (although it could be argued that food availability influences diet);
- the natural environments of vectors that cannot reasonably be modified (e.g. in rivers, lakes, wetlands);
- impregnated bed nets (for this study they are considered to be non-environmental interventions);
- unemployment (provided that it is not related to environmental degradation, occupational disease, etc.);
- natural biological agents, such as pollen in the outdoor environment;
- person-to-person transmission that cannot reasonably be prevented through environmental interventions such as improving housing, introducing sanitary hygiene, or making improvements in the occupational environment.

\(^a\) Although natural UV radiation from space is not modifiable (or only in a limited way, such as by reducing substances that destroy the ozone layer), individual behaviour to protect oneself against UV radiation is modifiable. UV and other ionizing radiations are therefore included in our assessment of the environmental disease burden.

\(^b\) Occupational health risks also are directly related to physical, chemical and biological factors in the environment and related behaviours. This report focuses on such occupational risks as part of the general environment. For instance, in the context of the working definition for environmental factors used in this report, infections acquired by health care workers from needlestick injuries, as well sexually-transmitted diseases acquired in other occupational contexts, e.g. among commercial sex workers, are, for example, included in the analysis, as this refers to contact with infectious agents in the work environment, and related behaviour. Occupational health risks also may include the more distal economic and social determinants of occupational conditions, such as job security, which are however not fully addressed here.