Attention to health in EIA

There is a clear relationship between the environment and human health. It is estimated that a proportion of all illnesses in the Netherlands is environmentally related. That is why the health impact of a plan or project is important in an environmental assessment (EA). This factsheet describes which information an EIA or SEA should include, and what the available methods for assessing health effects are.

Why include health in an EA?

Inclusion of human health in an environmental assessment is often limited to an analysis of whether the initiative complies with existing regulatory standards and emission thresholds, for example for air quality and noise. However, this approach does not give a full understanding of the impact on health of a proposal.

When regulatory standards are met, it does not necessarily mean that health effects have been avoided, or that the living environment is healthy. Adverse effect on health occur below the regulatory standards. A worsening of air quality can have a negative health effect, even if the standards for air quality are not exceeded. similarly, an increase in noise levels may not breach the norm, but still result in more people suffering sleep disturbance. Also, not all environmental factors have been translated into regulatory standards and norms.

Moreover, a plan or project can also have a positive effect on health, through the addition of more "green" to the living environment, for example, or because of an improvement in air quality. These positive effects often receive little attention in EA reports.

Specifying the impact on health in an EA offers opportunities to:

- bring health considerations in the decision-making process;
- optimise plans/projects in the area of human health;
- prevent negative health impacts instead of taking measures retrospectively;
- create more support for the plan/project, because citizens see their health concerns directly addressed.

Other health factors

Besides environmental factors, such as air quality and noise, there are many more factors of importance to people's health. Consider, for example, smoking habits and indoor climate. Only the health consequences that could be caused by the proposed project or plan, either directly or indirectly, should be considered in an EA.

Health does not play an equally important role with every project. It is important to pay attention to human health in the following cases:

- large infrastructural projects near to concentrations of buildings;
- airports;
- siting and design of residential areas;
- high-voltage structures;
- controversial projects that tend to raise public concern, such as with intensive livestock farms.

Which information is included in the EIA?

This depends on the health risks associated with that particular plan or project, but also on the level of detail or the proposed plan or project has already been worked out.

Various environmental factors can influence health. The influence of air quality, noise levels and soil contamination on human health is well understood. With other environmental impacts the relationship is less certain, but the level of public concern may nonetheless be substantial. A case in point is electromagnetic radiation (from high-voltage pylons or UMTS masts). To be able to support a transparent debate, the EA for such projects should address such health effects.

An EA will often describe the development constraints for the proposed project or plan that follow from existing policies, including those for health. More proactively, the EA process can also be used as a design tool to develop plan or project alternatives that fully optimise human health. For example, by positioning homes and public facilities (such as schools) close to parks and gardens and by avoiding or minimising exposure to noise and odour levels.

Developing alternatives

Health can play a role at various stages in the development of plans/projects.
In the development of a residential site, for example:

- when considering the site: an interesting question from a health perspective is, 'Do we want people to live here?' or, 'Is this a suitable location for housing?';
- design alternatives: how can the design of the area contribute to an optimum living climate? This concerns: 1. minimising exposure to noise, air pollution and odour (for example, the shielding effect of buildings and maximising distance to road); and 2. maximising the positive effects of the environment (incorporating green and water elements, bicycle paths, etc.).

From a human health perspective, an EA should include:

- a description of the current living environment, including elements such as air quality, noise, odour, external safety;
- an identification of the number and location of houses and other vulnerable sites;
- the impact of the plan on the living environment (with contour maps, for example);
- the 'translation' of the points above into possible health impacts, preferably based on well developed dose/response relationships;
- whether health effects reinforce each other, or converge in certain areas, for example through a combination of worsening air quality and increased noise levels.

Soot as an indicator for health effects

Health effects caused by traffic are attributed to PM_{10} and $PM_{2.5}$. However, these particulates only explain part of the health effects. Studies have shown that soot is a better indicator for traffic-related health effects.
The measurement of soot is based on the outdoor concentration of elemental carbon (EC). From 2012 onwards sufficient data is expected to be available in the Netherlands to apply soot as an indicator in EIA.

An EA also looks into which mitigating measures exist to prevent negative impact on health or, even better, improve public health (such as the application of sound proof building façades or improvement of living enjoyment that is experienced from increased green in the urban areas). Because there are still many uncertainties (knowledge gaps) when determining health impacts, these uncertainties will need to be recognised in the EA, as well as the consequences of uncertainty in the assessment for decision-making. (See also the factsheet 'Dealing with uncertainties in EIA').

Methods

There are several different methods that can provide insight into health effects. It is important to carefully consider which method is best suited to each project. In any case, the EA should describe what the consequences of the plan or decision are for the living environment, as well as the numbers of people exposed and the dose/response relationships, where these are known.

Examples of health assessment methods:

- Calculations of distance (e.g. to a road) in combination with the number of vulnerable activities. This may be useful for a quick comparison between alternative routes for a new road.
- GES (Gezondheids Effect Screening, literally translated as Health Effect Screening, an approach developed in the Netherlands). The environmental effects are visually represented in contour maps. The effects are scored (good/moderate/poor), and each score is given a colour coding. The coloured maps provide helpful qualitative insights into the effects on the quality of the environment.
- Burden of disease calculations in DALYs (Disability Adjusted Life Years). A DALY integrates information about the number of people suffering from ill-health or at risk of early death, and the duration of the disability or the number of lost years of life. In this calculation, disease is weighted according to severity (0 represents good health and 1 represents death). Working with DALYs makes it possible to combine different health effects of different environmental aspects (air quality, noise etc). This is especially useful when comparing alternatives for complex projects or plans with multiple environmental effects.

The available methods vary from broad-brush to highly quantitative. There is not one single, most-suitable method. The method choice is determined by the project phase, the available data and the level of detail of the decision to be taken. Regardless of the method applied, it is crucial to keep in mind that:

- if health impacts are relevant to the EA, it is a good idea to involve a health expert in the assessment;
- the effect on people come into view in the assessment (especially housing and vulnerable locations);
- the method is simply a tool, it is not a goal. The assessment should provide the necessary insight in the health effects of a plan/project to enable dialogue and decision-making.

Need to know more?

Additional information can be found at www.commissiemer.nl (in Dutch) or at www.eia.nl. (in English)

You can also contact our help desk:

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