



Environmental Factor Guideline

Human Health

The objective of the factor *Human Health* is:

To protect human health from significant harm.

Purpose

The purpose of this guideline is to communicate how the factor *Human Health* is considered by the Environmental Protection Authority (EPA) in the environmental impact assessment (EIA) process.

Specifically the guideline:

- describes the factor *Human Health* and explains the associated objective
- describes EIA considerations for this factor
- describes issues commonly encountered by the EPA during EIA of this factor
- identifies activities that can impact on human health
- provides a summary of the type of information that may be required by the EPA to undertake EIA related to this factor.

What is human health?

The World Health Organization defines human health as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity”. This is a holistic approach to human health to which EIA of significant proposals and schemes can contribute by ensuring that human health is not materially affected by development activity.

Scope of this guideline

For the purposes of EIA, consideration of possible impacts to human health is largely confined to EIA of harmful emissions to air and harmful discharges to soil, inland waters and marine waters, that is through impacts to the physical environment. EPA guidance with respect to emissions to air and discharges to soil and inland and marine waters are dealt with in the *Air Quality*, *Terrestrial Environmental Quality*, *Inland Water Environmental Quality* and *Marine Environmental Quality* guidelines respectively. This includes emission or discharge of potentially harmful materials such as asbestos or lead.

Occasionally, noise can pose health problems rather than just amenity issues. As this is an exception rather than a common occurrence, the EPA's guidance on noise is contained within its *Social Surroundings* guideline and associated noise technical guidance.

Because the consideration of the above health hazards are explicitly informed through other EPA guidelines, this guideline provides the specific framework for considering the possible impacts to human health arising from the emission of radiation.

The guideline does not address occupational health and safety which is comprehensively regulated by other agencies.

The environmental objective for Human Health

The EPA's objective for the factor *Human Health* is "To protect human health from significant harm." The objective recognises the importance of ensuring that human health is not significantly affected as a result of implementation of a proposal or scheme.

Considerations for environmental impact assessment

Considerations for EIA for the factor *Human Health* include:

- that the design, operation, ongoing management and monitoring of proposals minimise emission of radiation to the environment
- that exposure to radiation meets regulatory dose limits set for radiation and then is further managed to as low as reasonably achievable.

Issues

It is well understood that high doses of radiation can be harmful or even fatal. The damage caused by exposure to radiation is a combination of the type of radiation, the duration of exposure, and the part of the body that is exposed. The effects of a radiation dose can be either prompt or delayed. Prompt effects occur within the first several months after exposure whereas delayed effects occur over many years. The delayed effects can include cancer or other diseases in exposed persons and harmful effects on unborn children.

Therefore, where there is a risk of impacts to human health due to possible exposure to radiation arising from the implementation of a significant proposal, the EPA may assess the proposal. In doing so, the EPA will seek the advice of expert organisations and draw on the extensive technical guidance for assessing radiological impacts to human health. This guidance is supported by an international, national and State regulatory framework.

The EPA expects that appropriate modelling will be undertaken, including background dosages, to determine the risk of exposure to the public at all stages of a project, including operation, transport, closure and decommissioning.

Impacts

With respect to radiation, development activities that have the potential to impact on human health include, but are not limited to:

- mining, processing or storage of radioactive minerals or ores
- transport and storage of radioactive materials
- industrial processes that result in the build-up and release of radioactive substances or emissions.

Information required for EIA

Where human health has been identified as an environmental factor, the EPA may require the proponent to provide information or studies within the following broad topics with respect to radiation:

- radiological exposure assessments and modelling of radiation exposure risk to the public and workers
- establish an appropriate baseline for model input, including natural variation
- consideration of appropriate conversion factors and modelling of absorbed doses
- management of radiological impacts during transport of hazardous materials, including measures to limit risk of spills in the event of a transport accident
- radiation management measures that would be implemented to minimise emissions of radionuclide-containing dust and radon decay products
- monitoring, management and contingency procedures to reduce exposure
- health risk assessment, using evidence based information for health impacts.

Environmental Protection Authority 2016, *Environmental Factor Guideline: Human Health*, EPA, Western Australia.

This document is available in alternative formats upon request.

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