14 Land-use planning

This chapter provides general principles for the development and implementation of land-use planning arrangements, which contribute to the prevention and mitigation of chemical accidents. This is a standalone chapter as land-use planning can be viewed as a preventative measure in that it can help to ensure that hazardous installations are separated by appropriate distances from other installations and developments, thereby preventing adverse effects; or it can be viewed as a means to mitigate the adverse effects of releases, fires, explosions and other accidents that occur.

Develop and implement land-use planning arrangements

It is important to recognise that land-use planning applies not only to the zoning and siting of hazardous installations but also to significant modifications of existing installations. It is also very important to use land-use planning considerations when making decisions concerning proposals for developments in the vicinity of an existing hazardous installation (including, for example, homes, schools, shops and other commercial properties, and public infrastructure such as railroad stations).

While land-use planning is an essential element in the strategy for controlling risks associated with chemical accidents, it is not a substitute for other prevention and mitigation measures. In some countries, land-use planning is done at a national level in co-operation with local authorities, whereas in other countries it is strictly a local concern.

A number of guidance documents have been developed to support countries in land-use planning such as the United Nations Economic Commission for Europe (UNECE) *Guidance on Land-Use Planning, the Siting of Hazardous Activities and Related Safety Aspects* (2017[1]) (Box 14.1).

Establish land-use planning systems for new hazardous installations, changes to existing ones and proposed developments near an existing installation

Public authorities should establish land-use planning systems that should address the following elements:

- General zoning, which includes the establishment of specific areas for hazardous industrial activities, taking into account all aspects of protecting health, the environment and property.
- Case-by-case decision-making concerning the siting of a specific new installation, significant changes to an existing installation or proposed development(s) near an existing installation.

Different types of approaches can be used for land-use planning. These include, for example:

- *A consequence-based approach*: identifying areas where serious injuries will occur based on an assessment of the impacts of a number of possible event scenarios for a specific site/installation.
- *A risk-based approach*: identifying areas where there is a given probability of a specified level of harm based on an assessment of both consequences and probabilities of possible event scenarios for a specific site/installation.
- *A generic approach*: establishing safety distances based on the type of activity rather than a detailed analysis of a specific site/installation.

Public authorities should thoroughly evaluate environmental and social inequities when making land-use planning decisions to avoid unintentionally increasing the risk of individuals potentially being affected in the event of an accident.

Decisions in land-use planning should be transparent and, while they may primarily aim to achieve economic and social objectives, the achievement of these objectives should also be compatible with achieving a high level of safety.

The public should be given the opportunity to provide input into decision-making processes related to siting of hazardous installations. The potentially affected public should also be provided with notification of applications for siting as well as licensing of hazardous installations. Decisions concerning such applications should also be publicised.

Prepare a risk assessment when considering a proposal for new hazardous installations or development(s) near existing ones

Public authorities should, when considering a proposal for new hazardous installations or development(s) near existing installations, take account of the risks posed by an accident. The risk assessment should be developed by or on behalf of the public authorities in accordance with applicable requirements. The enterprise should make the necessary information available to the public authorities.

- The risk assessment should take into account the full range of implications and the advantages and disadvantages of the particular location proposed for the new installation or development. This should be done for proposals for new hazardous installations, for significant modifications to existing installations and for other developments in the vicinity of hazardous installations.
- Land-use planning authorities should be provided with (and take into account) technical information concerning the risk of the hazardous installation being considered (for example, from a notification provided to public authorities or from a safety report). Information should be made available by the enterprise concerned. The planning authorities should also take into account other information that may be available including, for example, reports prepared by academic institutions or non-governmental organisations (NGOs).
- A systematic approach to the identification, estimation and evaluation of hazards and risks is useful for providing guidance to public authorities when they make land-use planning decisions. For example, a systematic approach could allow for a relative ranking of hazards and risks.
- In making decisions concerning land-use planning, risk assessments inform the decision-making process but are often not the sole decisive influence. Such decisions are also a matter of socio-political judgment at the local level. In this regard, public authorities should make explicit all the criteria used to guide land-use planning decisions, including the criteria for analysing the tolerability/acceptability of risks and the decision-making process, and conclusions should be transparent.

Take into account the cumulative risk of all hazardous installations in the vicinity

Land-use planning decisions by public authorities related to hazardous installations should take into account the cumulative risk to the community of all hazardous installations in the vicinity. In some cases, it may be preferable from a safety perspective to centralise hazardous installations in one location, while in other cases it may be preferable to keep hazardous installations apart.

- Land-use planning decisions should take into account the possibility of a domino effect, where a chemical accident in one site could cause an accident in neighbouring site(s).
- Decisions should consider keeping suitable distances between a hazardous installation and other developments, populations and sensitive environments, in order to reduce the risks of adverse effects in the event of an accident.
- Decisions should take into account the natural hazards in the area in order to reduce the risks of a chemical accident and the adverse effects in the event of an accident.

Ensure co-operation and co-ordination within, across and amongst relevant public authorities

The land-use planning activities of local, state/regional and national public authorities should be co-ordinated.

- State/regional and national authorities should develop the overall objectives to be met (with supporting technical information and guidance) to achieve consistency in criteria at the local level.
- Local authorities, at an appropriate level, are usually in the best position to make specific planning decisions, taking into account local social and economic factors.

There will likely be multiple authorities involved in decisions related to land-use planning. Good co-operation and co-ordination should be a priority. Decisions and actions taken in other fields of public policy can have an effect on accident risk.

Develop control mechanisms for enforcement of land-use planning decisions

Land-use planning arrangements should consider developments in an area in totality, to prevent unintended consequences of piecemeal development increasing the overall level of risk.

Land-use planning processes and arrangements, as well as related control mechanisms, should provide a clear indication of the standards to be met and of the evaluation procedures used by public authorities.

Box 14.1. UNECE *Guidance on Land-use Planning, the Siting of Hazardous Activities and Related Safety Aspects*

The UNECE *Guidance on Land-use Planning, the Siting of Hazardous Activities and Related Safety Aspects* aims to assist in more effectively mitigating the effects of possible industrial accidents and the consequences on human health, the environment and cultural heritage within countries and across borders.

The general guidance (Part A) shares examples and points to good practices of countries' efforts in the UNECE region to integrate industrial safety considerations into environmental assessment and land-use planning processes. It also highlights the important interlinkages, synergies and complementarities between these and other instruments, including the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, aiming to assist competent authorities and practitioners in applying the provisions. This is supplemented by the technical guidance (Part B), which focuses on the risk aspects.

Source: UNECE (2017[1]), *Guidance on Land-use Planning, the Siting of Hazardous Activities and Related Safety Aspects*, https://unece.org/fileadmin/DAM/env/teia/images/1735403E_Final_ENG_web.pdf.

Reference

UNECE (2017), *Guidance on Land Use Planning, the Siting of Hazardous Activities and Related Safety Aspects*, United Nations Economic Commission for Europe, https://unece.org/fileadmin/DAM/env/teia/images/1735403E_Final_ENG_web.pdf. [1]