INFO SHEET

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Why Chlorine cannot be stored in large amounts or transported over long distances

Chlorine is an essential product of the Chlor-Alkali process and finds use in a range of critical products for modern society (e.g. clean water, modern construction and energy transition materials, pharmaceuticals etc.), but it presents significant safety, environmental and logistical issues that mean that large-scale storage or long-distance transport is challenging in Europe.

Hazard

Chlorine is a 'heavy' and highly toxic gas that must be carefully handled. As even small leaks can be dangerous to workers and nearby communities, storing large quantities greatly increases the risk and potential impact of accidental releases. As such, any Chlorine storage and transportation is carefully controlled, limited and heavily regulated.

Storage constraints

Chlorine must be stored and transported in high-pressure cylinders or tanks made of specific materials. As the risk associated with pressure containment increases with the amount stored, large-scale storage is not favoured by industry for safety, technical and financial reasons.

Safety and environmental regulations

Additionally, European regulations impose strict requirements on facilities that are handling hazardous substances like Chlorine. The regulatory requirements (including necessary safety systems, emergency response planning and inspection obligations) also increase with the amount stored.

What regulations apply to Chlorine storage/ transport?

Seveso

Chlorine is a *named* substance in the Seveso Directive (European rules that regulate the storage of goods that are considered to be dangerous). Under these rules, Chlorine triggers quantities (*lower-tier* of **10 tonnes** and *upper-tier* of **25 tonnes**) that mean that Member States need to ensure strict planning, safety reporting and emergency-planning obligations for industries that are storing Chlorine with the above amounts.

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Transport rules (ADR/RID/ADN/UN number 1017)

As a toxic and corrosive gas, Chlorine is covered by UN 1017 and transported under European Road (ADR), Rail (RID) and Inland Waterway (ADN) rules. These mean that special packing, tank requirements and tunnel restrictions apply.

Classification, Labelling and Packaging (CLP)

Under CLP (Regulation (EC) No 1272/2008), Chlorine is classified with hazards such as 'fatal if inhaled' (H330) and severe environmental and corrosive hazards. Those hazard statements lead to requirements for handling, storage, worker protection and emergency response.

National implementations add extra constraints

Member States will implement Seveso/ ADR/ RID/ AND/ CLP into national laws and can add local rules (planning limits, inspection regimes, and permitting) as needed. For example, road and rail transport through populated areas is heavily restricted in many areas and requires specific driver training, escorts, insurance, etc.

BAT Guidance

EU BAT guidance for Chlor-Alkali recommends producing Chlorine close to its consumers or converting it immediately into downstream products (e.g., Hydrochloric Acid, PVC, etc.) to minimise storage and transport.

For the above reasons, Chlorine is typically used at the production site. It cannot be readily transported long distances or stored in significant quantities, meaning local production sites are critical for Europe if society wishes to benefit from all the uses of this essential gas that they currently enjoy.

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