

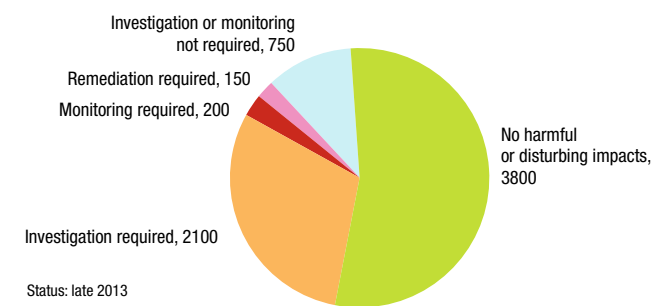


Chlorinated hydrocarbons have no place in the drinking water. The ChloroNet national platform promotes the exchange of experience, facilitates the joint development of solutions, and thus ensures the professional management of CHC pollution.

The ChloroNet Platform

ChloroNet connects the actors and supports them in the joint development of viable practical solutions. The network is supported by the Federal Office for the Environment (FOEN) and the Agency for Waste, Water, Energy and Air (AWEL) of the Canton of Zurich, which share responsibility for the operative management of the network. The cantons of Bern, Geneva and St Gallen are also represented on the strategic management committee.

An estimated 7,000 CHC company sites classified on the basis of their status



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The work continues

ChloroNet has established and positioned itself in Switzerland and abroad in recent years as a platform for the exchange of expert information and experience in the area of CHC-polluted sites and the provision of support tools. However, numerous cases of CHC pollution remain unresolved, the necessary work is merely pending in a number of cantons and the enforcement of remediation projects will continue to raise questions in the future. Thus it is important to continue the work of ChloroNet and to develop joint solutions.



"Of the approximately 1,200 CHC-contaminated sites in Switzerland, only around 100 have been successfully remediated. Numerous challenges remain to be resolved in the future."

Gérard Poffet, Vice-Director, Federal Office for the Environment (FOEN)



"Practical experience shows that the support tools developed by ChloroNet create clarity and greater certainty for site owners, consultants and the authorities in dealing with CHC pollution."

Jürg Suter, Director of the Office for Waste, Water, Energy and Air (AWEL), Canton of Zurich



"ChloroNet fosters the cooperation between research and practice. This makes it possible for experts to rapidly access research findings on investigation and remediation techniques."

Daniel Hunkeler, Director of the Centre for Hydrogeology and Geothermics (CHYN), University of Neuchâtel

A network for groundwater protection



An environmental problem throughout Switzerland

Approximately 12,300 sites in Switzerland are polluted with chlorinated hydrocarbons (CHC). These mobile, persistent and toxic pollutants pose a threat to the quality of the groundwater in many areas.



It is suspected that around 7,000 company sites throughout Switzerland are polluted with CHCs

Some 1,100 CHC-contaminated sites will have to be remediated in Switzerland in the years to come because they pose a risk to protected goods like the groundwater. Tetrachloroethene and trichloroethene are the main pollutants found on these sites.

Groundwater at risk

CHCs, which were used mostly as cleaning agents and solvents, mainly escaped into the environment through the activities of dry cleaning, engineering, electronics and metal-processing companies and through waste disposal sites. Today, numerous cases of CHC pollution pose a risk to used or usable groundwater resources that must be taken seriously.

A complex problem

The investigation and remediation of CHC-polluted sites are often complex, protracted and costly processes. The main reasons for this are the frequent difficulties encountered in locating the pollutants in the substratum, their mobility and their irregular distribution. Slow and rarely complete degradation, the formation of even more toxic degradation products, and uncertainties regarding sampling make CHC pollution a complex problem.

CHC pollution throughout Switzerland

Examination of the register of polluted sites reveals that around 7,000 company sites and approximately 5,300 waste disposal sites are polluted with CHCs. In recent years, a number of CHC-contaminated sites have been remediated in the context of development projects in urban areas. In other cases, those responsible for such sites have been able to benefit from the experience gained from previous investigations and remediation projects.

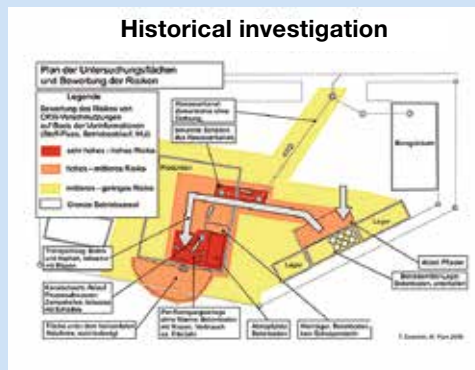
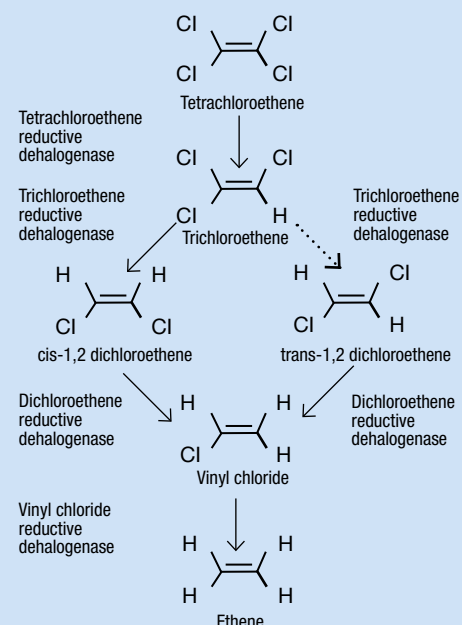
Support tools

ChloroNet has been evaluating existing investigation and remediation strategies and developing solutions to concrete problems based on enforcement practice since 2007. It has formulated recommendations for action based on the available expertise. The recommendations provide a support tool for the enforcement authorities and consultants. They can be accessed on the ChloroNet website.

Guide to the substance characteristics of CHCs

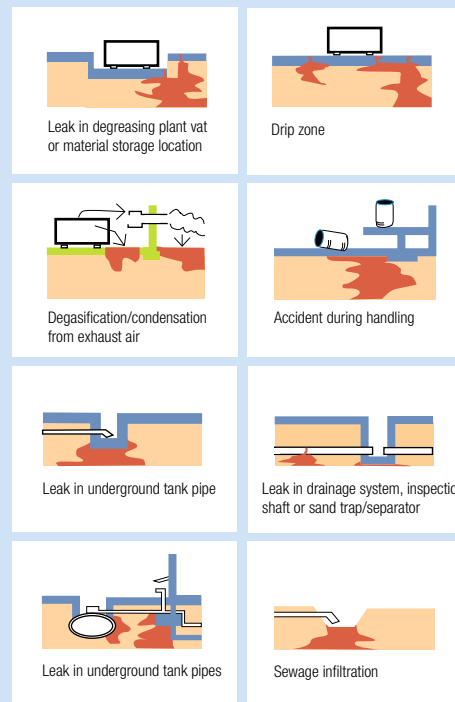
This guide provides rapid access to information about the different applications of the substances from the CHC group, their physical-chemical characteristics and their environmental impacts.

Degradation pathways of chlorinated ethenes under anaerobic conditions



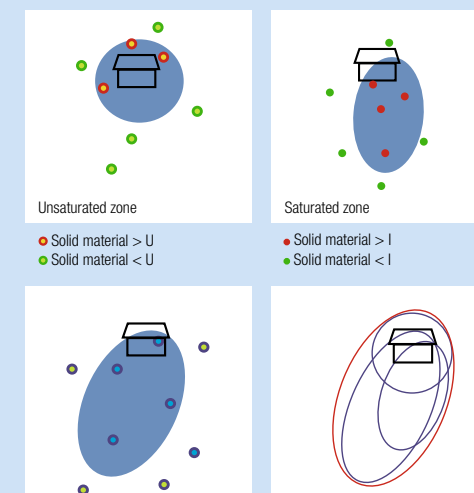
Investigation of CHC contamination

This expert report lists detailed requirements for the preliminary investigation of CHC-polluted sites. It also demonstrates the importance of the geological and hydro-geological context and describes sampling techniques.



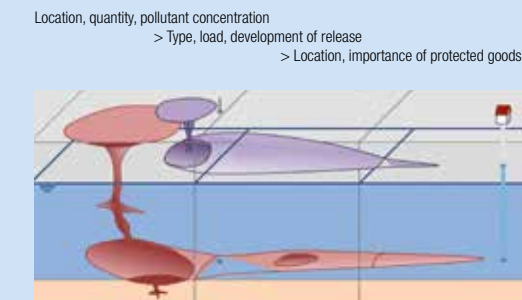
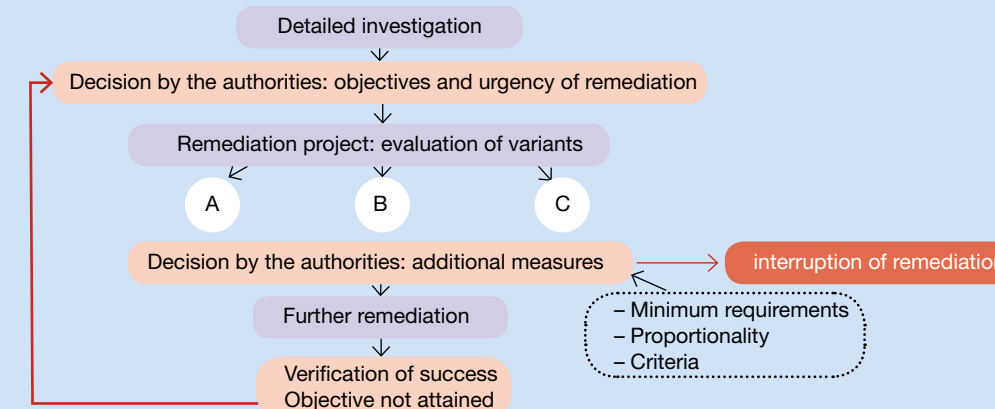
Criteria for site demarcation and removal from the register

Once the results of the technical investigation are available, these criteria are applied during the remediation process. The nature and scope of the tests depend on the geological conditions and the information already available about the pollution.



Minimum requirements and criteria for assessing the interruption of remediation

Cases frequently arise, in which the objectives of a project for the remediation of CHC-contaminated sites are not attained. The jointly developed practical solution specifies minimum requirements and criteria for the interruption of remediation.



Consideration of the CHC load

The CHC load should be considered as part of the detailed investigation for the assessment of the urgency of a remediation project. This information helps the experts to understand a polluted site and represents an important criterion in the assessment of the associated risks. The resulting expert report provides a basis for discussion and decision-making.

Expert consultation

In difficult cases, this process helps to improve the quality of decision-making and enables cost savings, for example, when it comes to selecting remediation measures. The authorities and owners of CHC-contaminated sites can request the evaluation of a measure through systematic analysis, and thus identify ways in which it can be optimised.

Seeking joint solutions

The ChloroNet national platform promotes the exchange of experience between experts and gathers the expertise available in both Switzerland and abroad. By doing this, the network aims to develop viable practical solutions for the optimum management of CHC pollution from both an ecological and economic perspective.

Environmental authorities, engineering consultants, remediation companies and site owners face numerous difficulties when it comes to the investigation and remediation of CHC-polluted sites. The ChloroNet network tackles this problem and develops suitable investigation strategies and viable practical remediation methods in collaboration with all of the actors involved.

Importance of sharing experience

The exchange of expert knowledge and concrete experience regarding the investigation and remediation of CHC-contaminated sites enables the participants to learn from each other and to draw the correct conclusions from past mistakes and avoid their repetition. This networking and coordination form part of a problem-solving approach which aims to conserve resources.

One of ChloroNet's main objectives is to characterise sites contaminated with CHCs in as much detail as possible, assess the risk they pose to the environment and identify the urgency of their eventual remediation. The platform, which was established in 2007, uses a variety of instruments for this purpose.

Annual conference

Since 2008, the platform's annual conferences have been dedicated to a key topic. Experts from the federal authorities and cantons and from engineering consultancies and research institutions in Switzerland and abroad present the latest insights from research and practice on the topics in question. Previous topics included, for example, the investigation and remediation of CHC-contaminated sites, site demarcation and CHC load calculation, and the interruption of remediation.

Working groups

Experts from consultancies, cantonal authorities and the FOEN meet in topic-related working groups with the aim of developing practical solutions to concrete problems. They report on their progress at the annual conference.



The ChloroForum provides a platform for the exchange of experience and debate in small groups. It gives participants an opportunity to discuss current issues, participate actively in the debate and introduce their own topics.

