

# CHLOROALKANES, TESTING OF ENVIRONMENTAL SAMPLES USING GC-MS-NCI

**Chloroalkanes or Chloroparaffins as they are often referred to is a mixture of polychlorinated alkanes with similar properties and behaviour as persistent organic pollutants (POP's) such as PCB. Based on the length of the carbon chain these compounds are divided into short-, medium- and long chained, SCCP, MCCP and LCPP.**

Industrial production of chloroparaffins started as far back as 1930. Similar to PCB the properties of chloroparaffins were desirable for many applications. High chemical stability and flame resistance along with their viscous properties lead to a widespread global usage. Some of the most common application of chloroparaffins are as lubricants, flame retardants, plasticiser and as metal working fluids.

Needless to say the properties of the compounds that are desirable for industrial purposes are equally challenging when the compounds are released into the environment. They are non-biodegradable and bio accumulates in nature. Toxicity of the compounds varies with degree of chlorination and length of carbon chain. They have a low acute toxicity but have been classed as very toxic to aquatic life with long lasting effects.



While there for many years has been less focus on chlorinated paraffin's in most European countries compared to for instance PCB and dioxins, the knowledge about these compounds has increased lately. This is especially true for SCCP. SCCP is today included in the European Water Framework Directive, identified as a high priority hazardous substance according to ROHS directive and substance of very high concern (SVHC) in the REACH regulation.

In laboratories around the world the challenge has been how to enable exact quantification of the SCCP and MCCP as they do not separate into these groups in the analytical instruments, gas chromatographs. Legislation, as mentioned above, calls for separate quantification of the total concentration of SCCP and MCCP. By utilising old methods and instrumentation such as GC-ECD or standard GC-MS there is a high probability that results reported will be inaccurate.

Hence, ALS decided to utilize a more sophisticated method, so-called negative chemical ionisation or NCI. This decision was made in order to give clients better and more valid results to fulfil legislative demands.

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