

FEMTOGRAM HIGH SELECTIVE 2,3,7,8-TCDD DETERMINATION USING
CHEMICAL IONISATION WITH LOW RESOLUTION MASS-SPECTROMETER

Mitroshkov A.V., Revelsky I.A., Kolomiets L.N.
Institute of Physical Chemistry Russian Acad. of Sciences,
Moscow

It is well known, that high selective and sensitive determination of 2,3,7,8-TCDD is usually fulfilled using GC coupled to high resolution mass-spectrometry and EI ionisation. In case of low resolution mass-spectrometry the time consuming sample preparation is necessary.

The detection limit in both cases is about the same and in the pg range. The selectivity of the 2,3,7,8-TCDD determination using low resolution mass-spectrometry, has been increased when CI has been used with oxygen or its mixtures with methane or carrier gas as ion-reagent. Sensitivity in this case was in the same pg range, but contradictory results have been obtained by different authors from the point of view as sensitivity and selectivity and mass spectra composition.

We have developed high sensitive and high selective method of GC/MS 2,3,7,8-TCDD determination using low resolution mass spectrometry with CI in negative ion mode (mixture of argon and methane is used as ion-reagent). It has been shown, using mixtures of PCDDs and PCBs, that sensitivity and selectivity of their determination depended as from the ion source temperature and ionisation chamber pressure, and structure of isomers. The optimum conditions has been chosen which allow to determine 2,3,7,8-TCDD on the 10^{-13} - 10^{-14} level and make this determination quite selectively keeping in mind as TCDD isomers with close 2,3,7,8-TCDD retention times and some PCBs. The corresponding data will be presented.

