

研究论文

大体积进样技术在气相色谱-质谱法测定二噁英类化合物中的应用

王亚伟^{1,2}; 张庆华¹; 江桂斌³; 贺卿³

中国科学院生态环境研究中心¹

武昌珞珈山中国科学院水生生物研究所开放室²

收稿日期 2006-5-11 修回日期 2006-7-19 网络版发布日期 2007-2-9 接受日期

摘要 利用大体积进样技术 (large volume injection, LVI), 结合气相色谱-质谱方法对二噁英的测定效果进行了研究。同时与传统分流/不分流进样技术进行了对比。对进样体积为1, 5, 10, 25, 50和100 μL 的色谱图进行了分析。研究表明使用大体积进样方式, 在不影响色谱分离度的同时, 大幅度提高了分析灵敏度。通过对土壤样品的检测, 证明该方法可以用于环境样品的实际测定。

关键词 [气相色谱-质谱联用](#) [大体积进样](#) [二噁英](#)

分类号

Determination of Dioxins by Gas Chromatography-Mass Spectrometry Coupled with Large Volume Injection

Abstract

The common analytical instrument for dioxin analysis/determination is gas chromatograph (GC) coupled with an electron capture detector (ECD), a flame ionization detector (FID), and a mass spectrometer (MS), etc. Generally, since the concentration levels in environmental samples are pg/g or pg/L, it requires a very high resolution and sensitivity for the analytical system. To solve the problem one way is to increase the amount of a sample, however, which can significantly increase the pretreatment work load. The other way is to increase the injection volume. In this paper, a method for dioxin determination was developed using GC-MS coupled with the large volume injection (LVI). Under the condition of maintaining the same amount of solute, the comparison was studied for the changes of peak areas and peak widths by the injection of different volumes from 1 to 100 μL . The results showed that the peak area and peak width did not have obvious changes, and the separation performance was not affected compared with the traditional split/splitless injection. The detection limits obtained are improved by 12 orders of magnitude over those using split/splitless injections. Once the operation conditions are optimized, LVI is more flexible in handling samples of wide concentration ranges than the traditional split/splitless inlet approach.

Key words [Gas Chromatography- Mass Spectrometry](#) [Dioxin](#) [Large Volume Injection](#)

DOI:

通讯作者 江桂斌 gbjiang@rcees.ac.cn

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(1848KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含 “气相色谱-质谱联用” 的相关文章](#)
- ▶ [本文作者相关文章](#)

- [王亚伟](#)
- [张庆华](#)
- [江桂斌](#)
- [贺卿](#)