Method for Analysis of Biphenyl for Dibenzofuran and Dibenzo-p-dioxin

Principle

Biphenyl is dissolved in a suitable solvent and analyzed for dibenzofuran and dibenzo-p-dioxin by gas chromatography/mass spectrometry.

Experimental

1. 3 g biphenyl is dissolved in 10 ml Nanograde methylene chloride.
2. A 5 microliter aliquot of this solution is injected into the ~~Hewlett Packard 5980A~~ gas chromatograph/~~mass spectrometer/computer system~~ OK, using ~~with~~ the following experimental parameters:
   - GC oven temperature 150 °C (dibenzofuran)
     170 °C (dibenzo-p-dioxin)
   - Selected ion monitoring mode
     m/c 168 (dibenzofuran)
     174 (dibenzo-p-dioxin)
   - 70 eV electron energy

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- Standard GC/MS techniques

3. Five microliter aliquots of appropriate standards representing 5 - 50 nanograms of dibenzofuran and dibenzo-p-dioxin are chromatographed analyzed under identical conditions.

4. Concentrations of components, if found, are calculated as follows:

$$\text{concentration (ppm)} = \frac{\text{area sample}}{\text{area standard}} \times \frac{\text{concentration standard (}\mu\text{g/ml)}}{\text{triphenyl concentration (g/ml)}}$$

Results

No dibenzofuran or dibenzo-p-dioxin was detectable in Monsanto triphenyl with a lower detection limit of 0.5 ppm.