การวิเคราะห์สารเฮโลจิเนเตดอัลเคน โดยวิธีการสกัดระบบจุลภาก



นางสาว กฤตยา สุพรรณพงศ์

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ANALYSIS OF HALOGENATED ALKANES BY MICROEXTRACTION TECHNIQUE

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พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสีเขียวนี้เพียงแผ่นเดียว



กฤตยา สุพรรณพงค์ : การวิเคราะห์สำรเฮโลจิเนเตดอัลเคนโดยวิธีการล่กัดระบบลุลภาค (ANALYSIS OF HALOGENATED ALKANES BY MICROEXTRACTION TECHNIQUE) อ. ที่ปรึกษา : ดร.ลิทธิฮัย ลีพิพัฒน์ไพบูลย์, 201 หน้า

ในการวิจัยนี้ได้ศึกษาการส่กัดระบบจุลภาคของสำรเฮโลจิเนเตดอัลเคน ได้แก่ เมทิลีน-คลอไรด์ คลอโรฟอร์ม 1.1.1-ไตรคลอโรอีเทน คาร์บอนเตตระคลอไรด์ และ 1.2-ไดคลอโร-โพร เพน ในตัวทำละลายอินทรีย์ และการวัดปริมาณ โดยเครื่องมือแกล้โครมาโทกราฬที่มีอิเล็กตรอน-แคบเจอร์เป็นดีเทคเตอร์ การศึกษาอิทธิพลต่าง ๆ ที่มีผลกระทบต่อประสิทธิภาพของการล่กัด ได้แก่ อัตราล่วนปริมาตรของสำรละลายตัวอย่างต่อปริมาตรของตัวทำละลายอินทรีย์ คือ ที่อัตราล่วน 9:1, 5:5 และ 2:8, ชนิดของตัวทำละลายอินทรีย์ คือ เฮกเซ่น ไซ่โคลเฮกเซ่น และไอโซ่ออกเทน และการ ซ่อลท์ดิงเอาท์ (salting out) ด้วยเกลือโซ่เดียมคลอไรด์ และเกลือโซ่เดียมซีลเฟต ประสิทธิภาพ ของการล่กัดของล่ารเฮโลจิเนเตดอัลเคนที่ศึกษาอยู่ในช่วง 31.05-101.46%, 44.14-106.04% และ 67.28-107.99% และคาเบียงเบนมาตรฐานสัมพัทธ์อยู่ในช่วง 0.16-8.25%, 0.11-10.76% และ 0.47-10.67% เมื่อใช้อัตราล่วนของปริมาตรลารละลายตัวอย่างต่อปริมาตรของตัวทำละลาย 9:1. 5:5 และ 2:8 ตามลำดับ ลัดล่วนที่เหมาะล่มที่ลุดที่ใช้ในการล่กัดระบบจุลภาค ของลำรเฮโลจิเนเตดอัลเคนใน น้ำคือ การใช้เกลือโซเดียมซีลเฟต 2.00 กรัม, อัตราล่วนปริมาตรของลำรละลายตัวอย่างต่อปริมาตร ของตัวทำละลายอินทรีย์ 9:1 และตัวทำละลายไอโซ่ออกเทน ค่าความถูกต้องของวิธีการนี้ ได้จากการ ตรวจล้อบลำรละลายผล่มของลำรเฮโลจิเนเตดอัลเคน ที่ทราบค่ำความเข้มขันแน่นอน และพบว่าเปอร์เซ็นต์ ของความผิดพลาดอยู่ในช่วง 1.00-5.46% นอกจากนี้ได้มีการเก็บตัวอย่างน้ำจากแหล่งต่าง ๆ และ วิเคราะห์ด้วยวิธีการล่กัดระบบจุลภาค ปริมาณของล่ารเฮโลจิเนเตดอัลเคนที่ต่ำที่ลู่ดที่ล่ามารถวัดปริมาณได้ อยู่ในช่วง 0.01-150.00 พีพีบี (ppb).

ภาควิชา	រ ខាជ	ลายมือชื่อนิสิต
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ปีการศึกษา	2531	ลายมือชื่ออาจารย์ที่ปรึกษา

พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสีเขียวนี้เพียงแผ่นเดียว

THE STREET STREET

KRITAYA SUPARNPONGS : ANALYSIS OF HALOGENATED ALKANES BY MICRO-EXTRACTION TECHNIQUE. THESIS ADVISOR : DR.SITTICHAI LEEPIPATPIBOON 201 pp.

The microextraction technique of halogenated alkanes which is based on the extraction of an organic priority pollutants i.e., methylene chloride, chloroform, 1,1,1-trichloroethane, carbontetrachloride and 1,2-dichloropropane into organic solvent followed by the measurement of electron capture gas chromatograph was investigated. The various effects including sample-tosolvent ratios of 9:1, 5:5 and 2:8, organic solvents i.e., hexane, cyclohexane and isooctane and salting out with sodium chloride and sodium sulfate on percent recoveries of these compounds were studied. The percent recoveries of the halogenated alkanes were in the range of 31.05-101.46%, 44.14-106.04% and 67.28-107.99% for the 9:1,5:5 and 2:8 with the percent RSDs of 0.16-8.25%, 0.11-10.76% and 0.47-10.67% for the sample-to-solvent ratios of 9:1, 5:5 and 2:8, respectively. The 2.00 g of sodium sulfate, sample-to-solvent ratio of 9:1 and isooctane was considered as the best combination for the microextraction of the halogenated alkanes in the water samples. The accuracy of this technique was carried out with the synthetic unknown mixture solution and the results of the percent error were in the range of 1.00-5.46%. In addition, the real water samples from various places were also collected and analyzed by the microextraction technique. the minimum detectable levels of the halogenated compounds were in the range of 0.01-150.00 ppb.

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