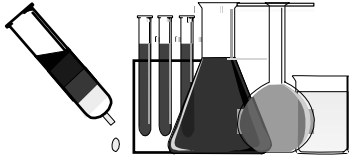


Solid Phase Extraction

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Introduction to Solid Phase Extraction (SPE)

JCA 072006

<http://www.forumsci.co.il/HPLC>


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Sample Sources

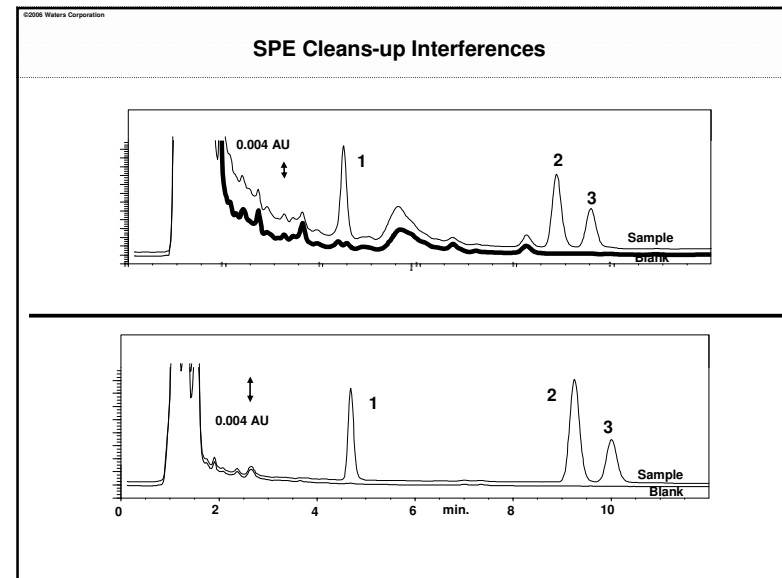


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The Goals of Sample Preparation



- ✓ To remove interference for
 - Better chromatography
 - More confident analytical results
 - Longer column lifetime &
 - Less instrument downtime
- ✓ To enrich sample for
 - Higher detection sensitivity



Solid Phase Extraction

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Solid Phase Extraction (SPE) Formats and Configurations

Cartridge Bed

Classic Plus Syringe Barrel

Disk

Empore[™] Disk

Coated Fiber

SPME (GC)

96 Well Plates

On-line Devices

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Solid Phase Extraction (SPE)

Sample is in Liquid State

Driving Forces

- ^ Gravity
- ^ Pressure
- ^ Vacuum

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Gravity

□ Gravity

Gravity flow is perhaps the simplest way to use a Sep-Pak[®] cartridge, as it requires little additional equipment. However, the flow rate is very slow. Gravity will generate flow rates of less than 0.25 mL/min. To use gravity flow, set up a rack or stand to hold the cartridge above the liquid receiving vessel. Pour solvent or sample into the empty reservoir of a Sep-Pak[®] Vac or Vac RC cartridge or to a reservoir attached to a Sep-Pak[®] Plus, Light or Classic cartridge.

Note: centrifugation of the cartridges is also used

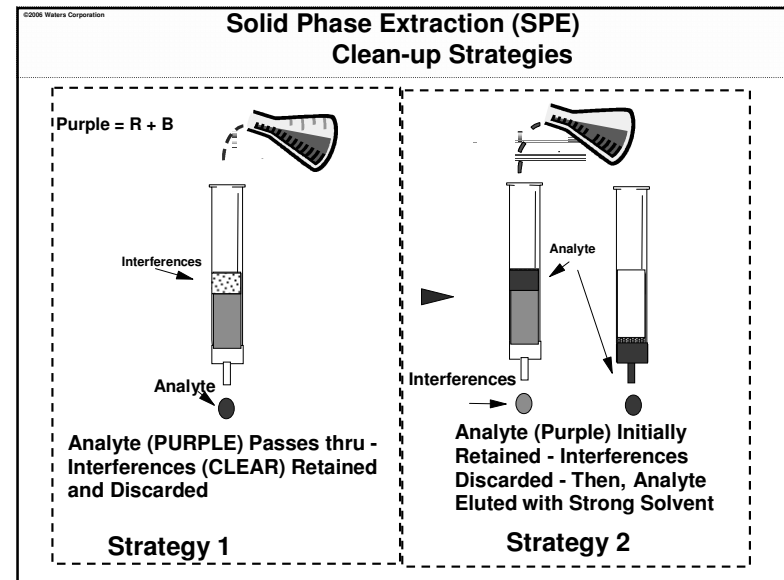
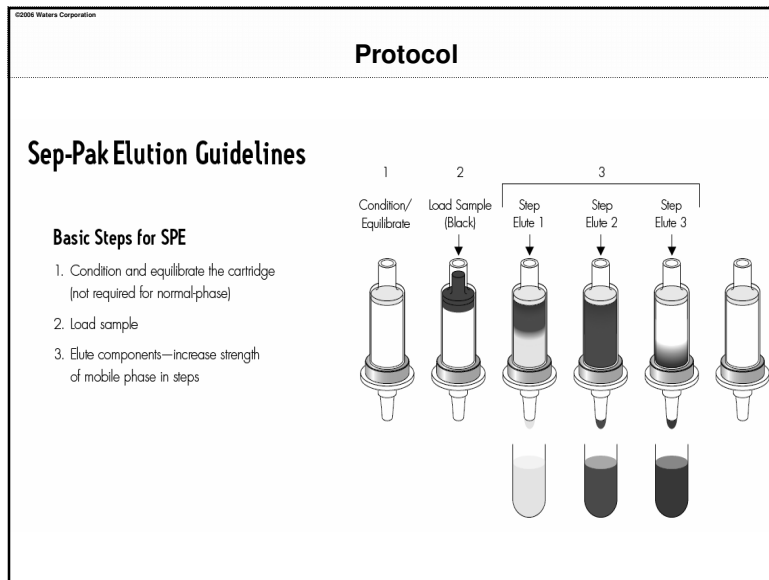
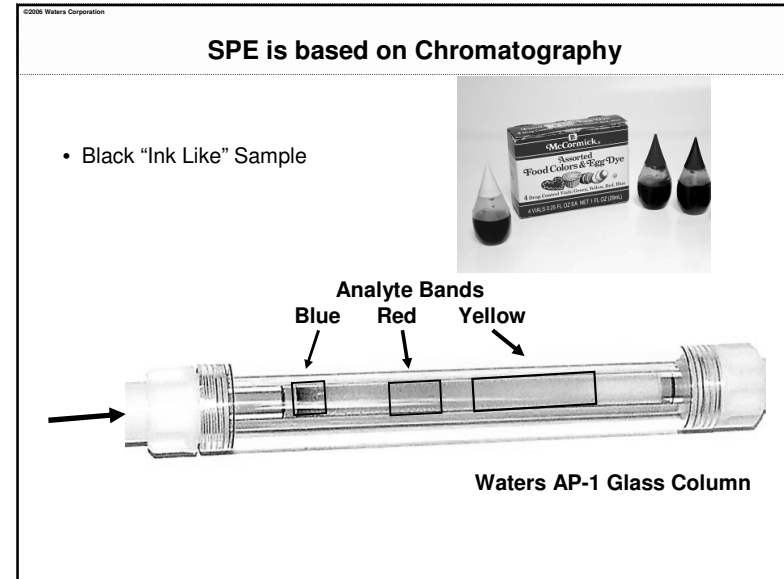
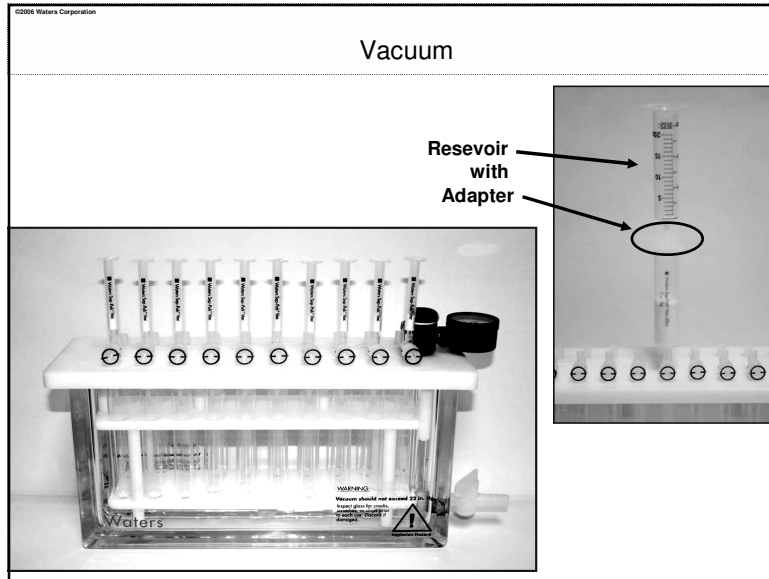
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Solid Phase Extraction (SPE) Positive Pressure

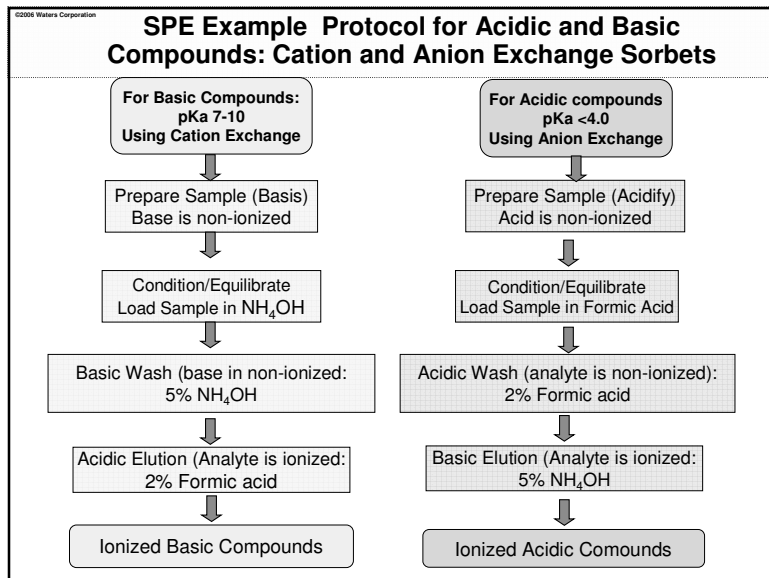
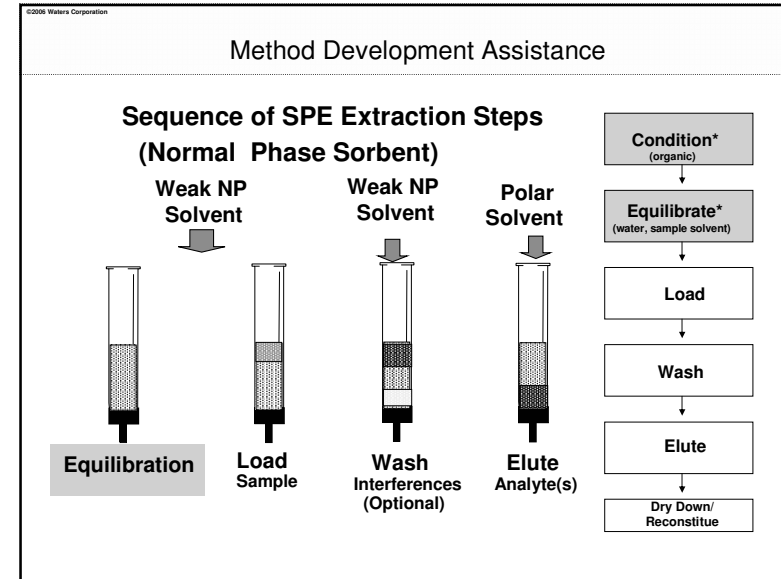
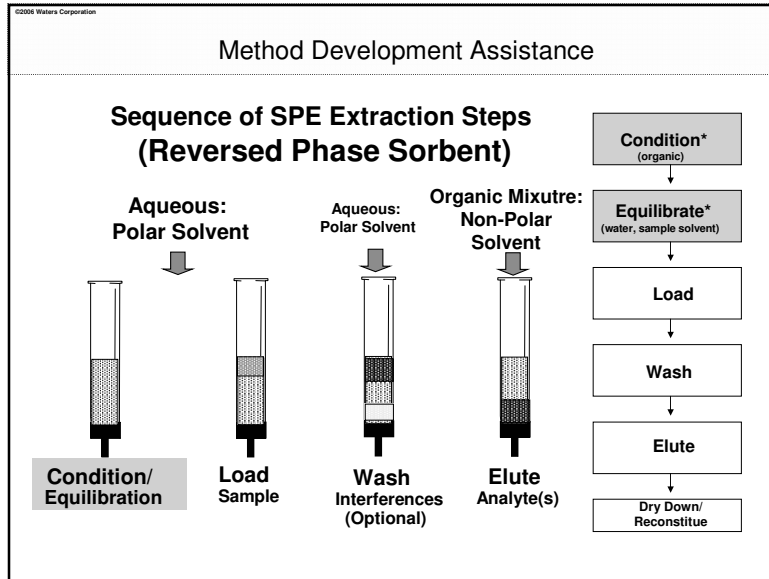
Use a syringe to force liquids through chromatographic bed

Syringe Barrel Adapter

Solid Phase Extraction



Solid Phase Extraction



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Modes of Separations: Summary

	Reverse Phase	Normal Phase	Ion Exchange
Analyte	Low to moderate polarity Hydrophobic	Moderate to highly polar/uncharged	Charged or Ionized
Matrix	Aqueous	Non-polar organic solvent	Aqueous/ Low ionic strength
Condition/Equilibrate	1. Solvate polar organic 2. Water	Non-polar organic	Low ionic strength buffer
Wash	Aqueous/buffer	Non-polar	Low ionic strength buffer
Elution Steps	Increase polar organic content in steps	Increase moderate to high polarity organic content in steps	Stronger buffers - ionic strength or pH to neutralize the charge