

910463

## Highlights

Sulfamethazine, a member of the sulfonamide class of antimicrobial drugs used to treat dairy cattle and other livestock, is known to cause thyroid cancer in rats and mice. Sulfamethazine in milk also cause severe respiratory problems in people who are sensitive to the drugs. Yet despite the Food and Drug Administration's (FDA) best efforts to educate dairy farmers, sulfonamide residues, in excess of enforcement-action levels, are showing up in the United States milk supply.

In 1988, the FDA and the National Conference on Interstate Milk Shipments encouraged states to develop a monitoring program for sulfamethazine residues in raw milk. The recommended method of testing milk samples is an interference-free HPLC procedure that measures sulfamethazine apart from other sulfonamide drugs. The analysis is sensitive to sulfamethazine in amounts below the FDA'S 10ppb action level and is applicable to raw and processed milk.

The chromatogram (right) was furnished by AMSI Laboratories of College Station, Texas whom the Texas Department of Health has contracted to monitor milk samples from all over the state for sulfamethazine residues. In 1989, AMSI analyzed thousands of raw milk samples via this HPLC method.

## Operating Conditions

**Sample Preparation:** As described by Weber and Smedley<sup>1</sup>

**System:** Waters 510 Solvent Delivery System, U6K Injector, Temperature Control Module and Column Heating Unit, Variable Wavelength UV/Vis Absorbance Detector

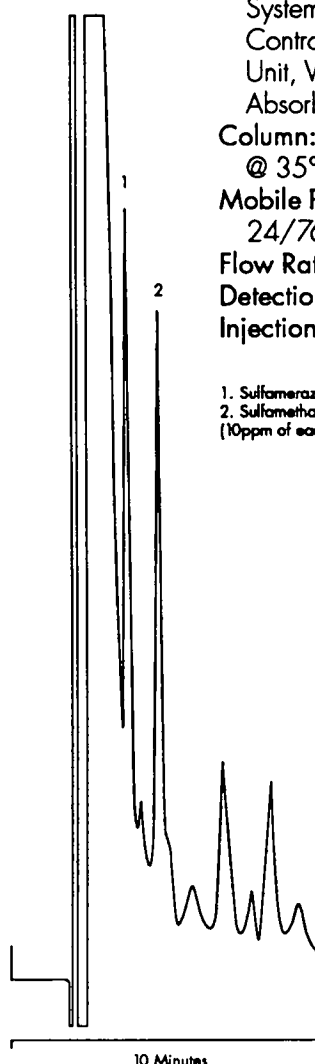
**Column:** Nova-Pak<sup>®</sup> C<sub>18</sub> (3.9 X 150mm) @ 35°C

**Mobile Phase:** Methanol/0.1M KH<sub>2</sub>PO<sub>4</sub>, 24/76

**Flow Rate:** 0.5 ml/min.

**Detection:** UV/Vis @ 265nm

**Injection Volume:** 50µl



1. Sulfamerazine  
2. Sulfamethazine  
(10ppm of each in raw milk)

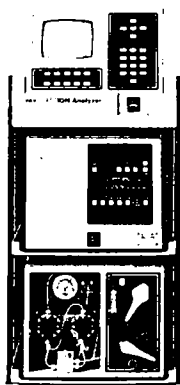
## Reference

1. Weber, J.D., and Smedley, M.D., J. Assoc. Off. Anal. Chem. 72(3) (1989) 445-447

©1989 Millipore Corporation

N01

## Ion Chromatography



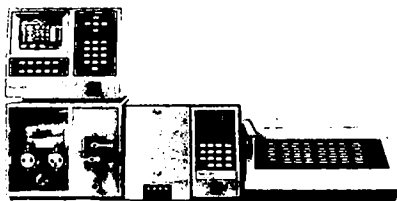
Stainless steel and non-metallic systems. Innovative detectors. Linear quantitation over a wide concentration range with single point calibration. If you need to analyze for mono- and divalent cations, ionic surfactants, organic acids, anions, metals, and metal complexes, talk to Waters.

## Data management



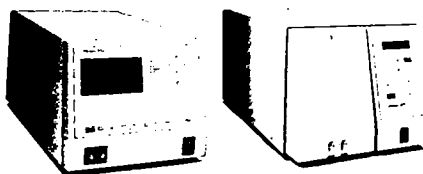
Single and multi-system data acquisition and control. Networking computers. Baseline™, Maxima™, and Expert™ Ease Chromatography Software. NEC and DEC hardware. From integrators to networking computers, Waters has a data solution to meet your every need.

## PowerLine™ Systems



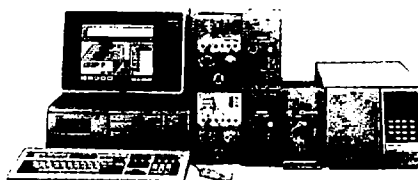
Single keyboard control and programming of pumps, injectors, and detectors with or without a separate personal computer. Waters PowerLine HPLC Systems put HPLC power where it belongs—at your fingertips. All Waters PowerLine HPLC, IC, GPC, GC and Preparative Chromatography Systems are controlled from the keyboard of the 600E PowerLine Module.

## Detection



UV/Vis: photodiode array, fixed, variable and programmable wavelength. Refractive index. Conductivity. Electrochemical. Fluorescence: fixed and programmable/scanning wavelength. Waters offers the food technologist the best choice of detectors to solve separations problems now and in the future.

## Special-purpose systems



Waters offers special-purpose systems for polymer analysis, amino acid analysis, peptide analysis, carbamate analysis, preparative chromatography, LC-MS, and sugar analysis. These systems come with installation and training, optimized methods, quality-tested chemistries, and the right combination of pumps, injectors, and detectors for reproducible analyses.

## Chemical Products



Analytical to pilot plant scale chemistries. Bulk media. Specialty columns for amino acids, peptides, proteins, fatty acids, carbohydrates, organic acids, carbamate pesticide residues and polymers. Guard columns. Solid phase extraction cartridges. Radial compression technology. Sample filtration. Robotics. From sample preparation to post-column derivatization, Waters chemical products are essential for doing high-resolution chromatography.

## Support and Service

Waters technical and service representatives are the best in the business. Along with Waters applications chemists, they create a support network which guarantees your satisfaction.

**Waters**  
Division of MILLIPORE

Waters Chromatography Division  
Millipore Corporation  
34 Maple Street  
Milford, MA 01757  
508-478-2000