

## PARTICLE NITRATE SAMPLING ARTIFACTS IN CALIFORNIA'S SAN JOAQUIN VALLEY

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Particle nitrate was measured during CY2000 in Fresno, CA using: 1) a RAAS speciation sampler typical of those fielded in the EPA speciation network with a denuder/quartz filter/nylon filter system; 2) a sequential filter sampler with an aluminum oxide nitric acid denuder, quartz-fiber filter, and a sodium-chloride-impregnated backup filter; 3) a Federal Reference Method PM<sub>2.5</sub> monitor with a quartz fiber filter; and 4) several versions of the ADI and R&P8400 continuous flash volatilization nitrate analyzer. Twenty-four hour ammonium nitrate concentrations at Fresno are 2 to 10  $\mu\text{g}/\text{m}^3$  during the summer and can exceed 50  $\mu\text{g}/\text{m}^3$  during winter. This paper compares nitrate concentrations from these methods for winter and non-winter periods. During summer, more than half of the ammonium nitrate evaporated from reference samplers, but less than 10% was lost during the cool winter periods. Continuous nitrate compared within  $\pm 20\%$  with filter nitrate, except during the winter of 2000/2001 when additional monitoring equipment raised the shelter temperature, thereby evaporating some of the nitrate before it was quantified. Good comparability was achieved during the previous winter. Continuous, 10 minute averages were useful in determining sharp increases in nitrate concentrations that were attributed to mixing from aloft to the surface. Primary carbon concentrations decreased simultaneously with the nitrate increase, indicating dilution of the primary emissions being exchanged for secondary nitrate.