

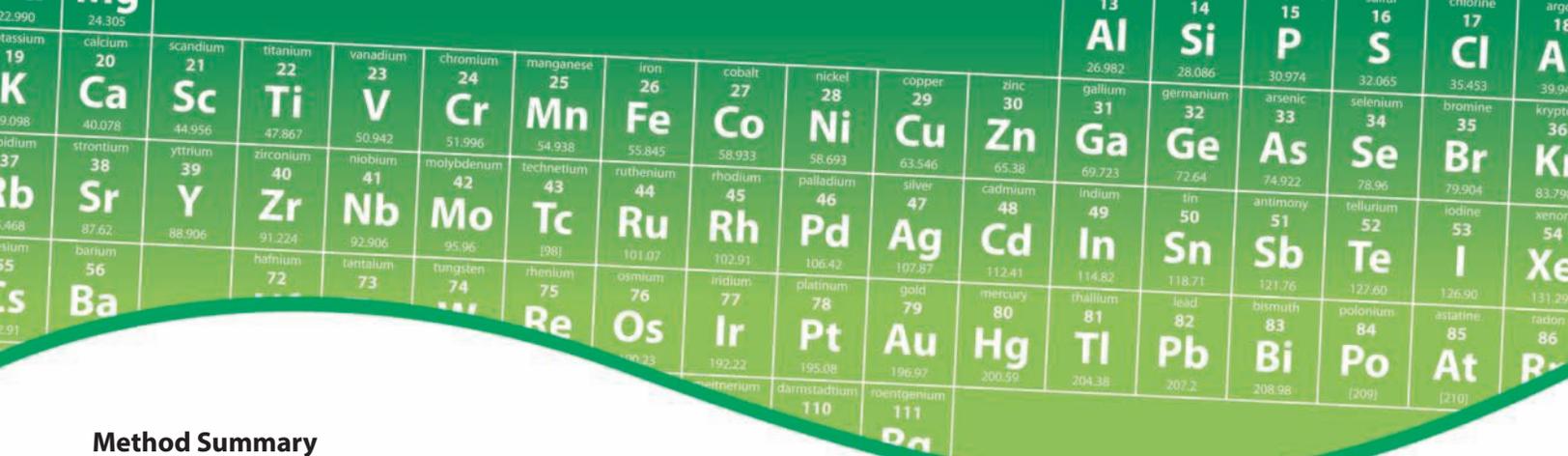
Flue Gas Desulfurization (FGD) Selenium Speciation

TestAmerica offers a unique analytical capability for the determination of selected species of selenium. Our analytical technique couples high performance liquid chromatography (HPLC) with inductively coupled plasma/mass spectrometry (ICP-MS) for the determination of Selenite, Selenate, and Selenocyanate.

Flue gas desulfurization (FGD) is a technology used by the coal-fired power industry to remove sulfur dioxide and other chemicals from exhaust flue gases. Though effective in reducing air emissions, wet scrubber FGD systems contribute selenium from the combusted coal to the FGD discharge water. Operators of coal-fired power plants are faced with the challenge of limiting the levels of selenium in these discharge waters. By understanding the speciation of selenium in the discharge, power plants can implement cost effective treatment and control technologies.

The chemistry of FGD wastewater can vary significantly from facility to facility depending on many factors including the type of FGD process, the composition of the coal and limestone, and the water used. It is important to know what selenium species are present when selecting wastewater treatment technologies for a particular wet

FGD system. Selenium in FGD wastewater is present in two primary forms: selenite and selenate. Understanding the factors that control selenium speciation allows power companies to design FGD systems that minimize the formation of selenate, which is more difficult to remove than selenite. Conditions that favor the capture of selenium in the solid phase of the FGD slurry can minimize the amount of selenium compounds that must be removed from the discharge water. Because wastewater treatment processes remove the various selenium species at different levels of efficiency, the selenium speciation and chemistry in FGD waters are of interest to power plants that operate FGD systems.



Method Summary

Selenium species in the sample are separated by HPLC prior to introduction to the ICP-MS. An internal standard is continuously infused into the system to ensure that instrument response is corrected for any variability caused by the sample matrix.

Analyte		CAS Number	RL - ug/l
Selenite	Se+4	14124-67-5	1.0
Selenate	Se+6	14124-68-6	1.0
Selenocyanate	SeCN	5749-48-4	1.0



Have a Question About Selenium Speciation Testing?



Dr. Richard Burrows
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Dr. Burrows was involved in the EPA's Method 1638 SOP and would be happy to help you with your questions. You may contact him through the TestAmerica website at:
<http://www.testamericainc.com/services/asktheexpert/experts/richard-burrows/>



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