



## **MERCURY METHODS EVALUATION TEST PROGRAM RESULTS**

With the ever-increasing focus on mercury emissions testing from coal-fired utility boilers, it has become increasingly important to learn and understand the varying applicability of the different available emission test procedures. Not all boiler tests can be performed at normally accessible stack locations, leaving some question as to the applicability of the various methods when applied to more challenging test conditions. Given the large quantities of funds that will be spend in the coming years on mercury emissions testing, it is very important that utilities and test contractors understand when and where to use which test methods.

The Air Compliance Group, LLC of Roanoke, VA and Philadelphia, PA recently conducted a methods comparison test program on a coal fired power station in the eastern United States. The purpose of this test program was to evaluate the acceptability of the Ontario Hydro and Sorbent Tube (EPA Method 30B) test procedures when applied to the economizer outlet test location of a utility boiler. Coal samples were also collected during testing, and analyzed for mercury content as an additional validation check on the two methods. In addition, a third party performed continuous mercury monitoring at the same test location, using EPA Method 30A procedures.

Triplicate tests were performed at the economizer outlet test location, during steady state boiler operating conditions. Particulate measurements were not performed as part of the test program however, as expected, particulate loading was quite high, since the test location was prior to any air pollution control equipment. The temperature of the gas stream at the test location varied slightly between 570°F and 600°F.

Sampling using the Ontario Hydro test procedure occurred without incident with the exception of a lost test run due to breakage of the glass thimble housing, which was required due to the high temperature of the gas stream. The high particulate loading resulted in an expected increase in sample train vacuum, however isokinetic sampling conditions were easily maintained throughout each test.

Sampling using the Method 30B procedures were strongly affected by the high particulate loading and, as expected, the test runs were not able to extend beyond ninety minutes because of excessive vacuum build-up.

No information is available regarding any problems that may have occurred with respect to the operation of the Method 30A analytical equipment.

The results of the testing showed very close agreement (<10% difference) between the calculated mercury emissions, based on the coal analysis, and the actual measurements using the Ontario Hydro test procedure. In addition, there was very close agreement within



the three Ontario Hydro test runs. The sorbent tube (Method 30B) test results however, were almost an order of magnitude lower than the calculated and Ontario Hydro test results. In addition, the recovery of the internal standards, spiked onto one of the paired sets of tubes for each run, was essentially zero. This is a clear indication that the high temperature of the test location resulted in desorption of the spiked mercury materials, and prevention of adsorption of the native mercury vapors in the gas stream. The Air Compliance Group has not been provided with the Method 30A results from the third party, but has been informed by site personnel that those test results were two to three times higher than the Ontario Hydro and calculated results.

Based on the data obtained during this test program, it is clear that the Ontario Hydro test procedure is the method of choice for testing at economizer outlet locations. The Method 30B sorbent tube approach is not applicable due primarily to the high temperature of the gas stream, and secondarily due to the high particulate loading at such locations.

The conclusions that can be drawn from this test program must be limited to the application of the test procedures to high-temperature and high-particulate-loading test locations such as economizer outlets. It is not believed that the conclusions drawn from this test program can be accurately applied to lower temperature test locations after air pollution control systems.

The Air Compliance Group, LLC has over thirty years of source testing experience, and typically performs over one hundred mercury emissions tests every year, at a variety of industrial facilities, using EPA Method 29, EPA Method 101A, the Ontario Hydro test procedure, and EPA Method 30B. ACG personnel are well versed in the advantages and disadvantages of each method, as well as the varying applicability of these different procedures. In addition to performing emissions testing utilizing these procedures, The Air Compliance Group, LLC will be equipped, by the end of 2007, to provide on-site analysis of mercury as well.

Customers are encouraged to contact the undersigned, or any member of the team of professionals at The Air Compliance Group, LLC if we can be of any service, or provide any guidance relative to mercury emissions testing programs.

Respectfully Submitted.

The Air Compliance Group, LLC

A handwritten signature in black ink, appearing to read 'A. B. Nunn, III', written over a horizontal line.

Arthur B. Nunn, III, QEP  
President  
art.nunn@aircompgroup.com  
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