The Wadsworth Center, New York State Department of Health use the latest NAG Library for SMP and Multicore.

The NAG Library for SMP and Multicore is used to underpin some the models that are being developed at the Wadsworth Center in New York for describing aspects of radioactivity in the environment.

Dr. Thomas Semkow is a Research Scientist at the Center, and a Director of Nuclear Chemistry Program, which provides the public health laboratory for the New York State Department of Health. Dr. Semkow is also Assistant Professor, School of Public Health, University at Albany, State University of New York and he has made use of many different routines from the NAG Library, on a wide range of hardware and software platforms, over the last twenty years. His area of work is the development of mathematical models to describe health-related processes occurring in the environment, as well as other physical processes.

The models being explored include

- fractal models of the distribution of toxic trace elements and radionuclides in coal-fly-ash aerosols and soils
- development of the fractal theory of radon emanation from solids
- statistical theory of radioactive decay and measurement using distribution theory and stochastic processes
- application of computers and networks in the laboratory and computer programming; and
- development of numerical algorithms.

To have access to some of the latest developments in numerical approaches for parallel processing, Dr. Semkow is using the NAG Library for SMP and Multicore on the 64bit processors that running some of the latest models. He said. 'Over the years, I have found that NAG has provided superior code in terms of quality and depth of detail; always based on very solid mathematics and mathematical understanding; always supported by clear and detailed documentation that enables users to understand the full details of how routines work and always delivered with the full range of reference sources. Having access to the latest parallel algorithms from NAG gives me many more options for ways to speed up our models '

As one example; the NAG Library is currently being used for test different random number distribution models, including the chi-squared distribution, t-distribution, and normal variates. The Library also provides pseudorandom number generator routines and offers choices of different base generators, giving the facility to tune models with alternative seeds. While some of the work done by the Laboratory can be carried out by using less detailed statistics packages, the NAG library is essential when it comes to more advanced models and looking for more complex interrelationships.