

APPLICATION NOTE

The Emergency Deployment of the Constellation CT-1128 Portable Gas Chromatograph-Mass Spectrometer in Response to the Nitrobenzene Spill in the Songhua River in the People's Republic of China

On November 13, 2005, there was a large and devastating explosion in the People's Republic of China at the Jilin Petrochemical Corp. nitrobenzene-aniline plant. The explosion resulted in an extensive release of chemicals into the Songhua River. The concentration of the major pollutant, nitrobenzene, was in excess of the Chinese national standard by a factor of 30.

As reported extensively by CNN and other major American media outlets, in order to protect the safety of the industrial and domestic water supply, the government of Harbin City decided to shut down the entire city water supply system for four days. As the nitrobenzene pollution plume continued to move along the Songhua River, it seriously threatened the safety of the water supply and the wellbeing of the ecosystem along the river downstream. It became necessary to obtain the real-time concentration of the nitrobenzene and take the measures necessary to protect the population and ecosystem.

Greenswald Response

The Environmental Protection Bureau of Heilongjiang Province invited Beijing Greenswald Environmental



Technology Developing Co., Ltd. (Greenswald), the distributor of Constellation's CT-1128 Portable GC-MS in China, to participate in the pollution monitoring. Members of the Greenswald technical staff were dispatched to the city of Jiamusi via a commercial airline carrying the CT-1128 portable GC-MS. The flight arrived at Jiamusi Airport at 1:00 AM on November 30, 2005. At 8:00 AM set-up of the instrument was initiated at the Jiamusi Environmental Monitoring Center, and at 9:00 AM the instrument was ready for nitrobenzene analysis.

On December 5, 2005, the instrument was deployed by Greenswald to the field in the town of Zhulian, Tanguan County (located 54 Km downstream from Jiamusi City). The instrument was set up at 12:35



PM and started to generate analytical data from the Dalai cross-section of the Songhua River within an hour. After 6:00 PM, the sampling rate was

CT-1128 GC-MS in the Mobile Laboratory

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increased to one sample every two hours to reflect the concentration of the pollutant in a more timely fashion. The sampling and CT-1128 analyses continued until the monitoring data of the Tongjiang cross-section was continuously below the safe concentration for 42 hours.

Accuracy

This indicated that the entire pollutant plume had moved out of the area. The CT-1128 portable GC-MS played a critical role by providing timely and accurate data in the field analysis for nitrobenzene caused by the nitrobenzene-aniline plant explosion.

While the CT-1128 was performing analyses in the field, samples of the water were also collected and delivered to the laboratory of the China EPA for analysis. A comparison of the results from the CT-1128 in the field and the laboratory are shown in the figure. The two sets of data are essentially identical.

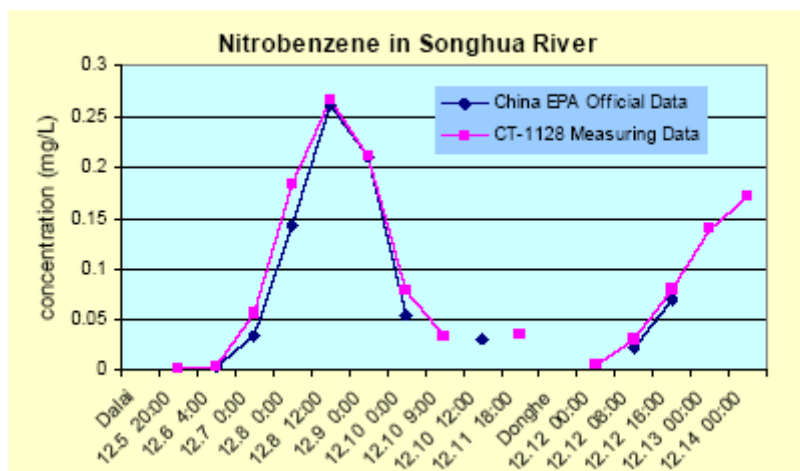
Testimonial

The following is a "User's Commentary" provided to Greenswald by the Environmental Monitoring Laboratory of the State of Jiamusi City:

"(The) CT-1128 portable GC-MS has provided a lot of data in tracing (the) pollution plume in (the) Songhua River. The instrument is easy to operate and transport. It is capable of generating analytical results for quantitative and qualitative analyses for unknown samples within 20 minutes after arrival in the field. In the Songhua River pollution emergency response, the instrument was continuously operated for 345 hours in analyzing water samples. The working conditions of the instrument were very stable and provided sensitive and accurate analytical data. When operated at (the) selective ion monitoring mode with split injection, the detection limit for nitrobenzene (is) 1 ppb, which exceeded the monitoring requirement."



CT-1128 Portable GC-MS with Laptop



Comparison of "In-the-Field" CT-1128 Data with "In-the-Laboratory" GC-MS Data



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