

Kansas Department of Health and Environment

Bureau of Environmental Remediation, Remedial Section

State Cooperative Program



Mercury Manometer Program

Background:

Kansas has been a leading natural gas producing state since the early 20th Century. From its inception, the natural gas industry has used mercury manometers extensively to monitor gas pressure and flow at wellheads, gathering systems, facilities, and transmission/distribution lines. Elemental mercury was inadvertently released at a number of these meter stations as a result of maintenance operations, equipment failure, vandalism, and operator error. Given the long, unregulated history of natural gas production in Kansas, KDHE/BER recognized that there were potentially thousands of mercury contaminated stations. Research into potential threats to human health indicated that the most immediate health concern was the exposure of workers to mercury vapors. Over a number of years, workers servicing meters could potentially receive significant cumulative exposure from contaminated meter stations.

Solution:

Given the potential magnitude of the problem, KDHE/BER initiated the Mercury Manometer Program in 1993 and charged the State Cooperative Program with management responsibilities. The Mercury Manometer Program evolved into a three phase approach. The first phase, Phase I, was the Site Assessment phase that initiated the process. During Phase I, natural gas companies operating in Kansas were requested to identify all stations where mercury had been or was currently used. Approximately 10,000 stations were assessed and 6,530 of these were identified as sites that used mercury. These sites were characterized through the Site Characterization phase, Phase II, which is conducted under an Agreement between each operator and KDHE. A work plan was developed consistent with KDHE's Scope of Work (SOW) which outlines sampling strategies for the sites.



Most excavation can be done through manual techniques.

Once all the stations had been characterized a final report was submitted to KDHE/BER summarizing the findings. To date 2,595 sites have been characterized as requiring remediation. These sites were remediated during the Site Remediation phase, Phase III, which was conducted under a Consent Order agreement between each operator and KDHE. Generally the contaminated soil was excavated and a composite sample was analyzed to determine if the soils were hazardous and to evaluate which remedial technique to employ. A Remediation SOW developed by KDHE outlined four possible remedial strategies, including soil treatment that allowed treated soils to be returned to the site, or off-site disposal of contaminated soils. The extent of the excavation was determined through field screening and verification sampling. A final report was submitted to KDHE/BER and the Consent Order would be terminated. As of June 2010 only one site remains to be remediated and should be completed in 2011. Additional companies that operate within Kansas have expressed interest in participating in the Mercury Manometer Program to characterize their manometer stations in the future.



Remedial activities at a typical meter station.



Excavated soil placed into soil bags awaiting characterization for disposal.

Benefits:

- Health risk to workers eliminated.
- An estimated 10,000 sites assessed, 6,530 sites identified as potentially impacted through historic use of mercury.
- 2,595 sites characterized as requiring remediation, 2,594 cleanups completed as of 2010.
- Approximately 4,000 cubic yards of soil remediated.