Random samples from each facility surveyed, as well as those samples having high fiber concentrations, as determined by the optical counting method, were analyzed on a transmission electron microscope (TEM) utilizing selected area electron diffraction (SAED) and energy dispersive X-ray analysis (EDXRA). Samples were observed at 17,000X magnification with fibers ($\geq$ 3:1 aspect ratio) sized by length and diameter. SAED was attempted on all observed fibers for identification. In addition, EDXRA was performed on individual fibers to determine their elemental composition. SAED patterns and EDXRA elemental spectrum ratios were compared with reference minerals (chrysotile and forsterite obtained from the U.S. Smithsonian Institution). Sample preparation and analysis were performed using the method described in the Technical Report "Review and Evaluation of Analytical Methods for Environmental Studies of Fibrous Particulate Exposure".[13]

General area samples for trace metals (lead, zinc, copper, iron, and manganese) were collected at most facilities using Staplex Type TF-1A high-volume samplers at a flow rate of 10 cubic feet per minute, and also with a sampling train and flow rate like that used for asbestos fiber collection. Samples were analyzed for metals by atomic absorption spectrophotometry in accordance with the NIOSH methods P&CAM Number 222, S186, S341, and S366.[14,15]

Bulk Samples

Samples of brake wear dust were collected from the brake drums of several vehicles that were being serviced during the surveys. These samples were analyzed by TEM for characterization and identification of fibrous particulates and for determination of fiber size distributions.