

Millions of workers are employed in mining, construction, and other occupations where significant amounts of airborne toxic inorganic substances are generated. Depending on the work practices, processes, techniques, and locations, exposures to airborne concentrations of a variety of metals such as lead, chromium, nickel, mercury, manganese, silver, beryllium, copper, and zinc can cause occupational illness. Also, exposures to inorganic substances such as acid gases are of concern in many occupations. These exposures can lead to a plethora of adverse health effects such as lung damage, anemia, cancer, asthma, and neural damage. The goal of this research has been to provide screening and analytical tools that can be used to aid in the prevention of excessive exposures to several of these chemical agents in the workplace. Examples of progress include: (1) Development of field screening methods for inorganics in the workplace, with emphasis on construction, mining, and small business; (2) Provided consistency of sampling and analytical procedures through promulgation of national and international voluntary consensus standards; (3) Updating and evaluating inorganic analytical methods, where needed (for instance, methods for metals and hexavalent chromium); and (4) Collaboration with researchers within and outside of CDC/NIOSH to leverage resources, maximize information exchange, and facilitate technology transfer. The use of these methods has been facilitated by promulgation of NIOSH methods, voluntary consensus standards, and commercialization of screening tests. Once these methods are tested and, if necessary, modified so that their applicability, accuracy, reliability, and ease of use can be verified in a broad range of work settings, they can be strongly promoted as valuable measurement tools for occupational health monitoring.