163 Lead, Chromium, and Molybdenum by Atomic Absorption. J.O. Pierce and J. Cholak. Arch. Environmental Health 13, 208-212 (Aug. 1966).

Atomic absorption spectrophotometry for the routine analysis of trace metals, especially lead, in biological systems of urine and blood is now possible. For the determination of lead, 25 ml of urine and 5 ml of blood are required. The analysis is rapid, free of interferences, and involves few manipulations. Most of the methods reported in the literature involve the extraction of lead as a chelate into an organic solvent. This procedure is quick and reliable, but fresh urine is usually required and whole blood must be used. For samples from which the lead cannot be extracted, ashing may be used satisfactorily. For samples of comparable and suitable size, the sensitivity of detection and the accuracy of analysis are equal to those obtained by present chemical and spectrographic methods. For handling traces of lead in samples of less than 1 gm or less than 1 ml in volume, only the spectrographic method is suitable. Analyses for chromium may be achieved by ashing the samples, whereas, in the case of molybdenum, the procedure lacks sensitivity and interferences add to the difficulties of analysis. The atomic absorption spectrophotometer has considerable potential as an analytical tool for the industrial hygienist. The speed of analysis and the possibility of the elimination of complex manipulations for most applications make the procedure very attractive for handling biological specimens as well as dusts and fumes collected from the atmosphere in the impinger, electrostatic precipitator, or on filter media. In the analysis of biological materials for trace metals by atomic absorption, consideration must be given to the absolute quantity of the specific metal present, as well as to the size of sample available. This technique may be used to supplement existing methods, but does not,in itself, solve all of the problems associated with microchemical analyses. There are 14 references.
-- Authors' summary

164 Chronic Toxicity of Gadolinium Oxide for Mice Following Exposure by Inhalation. R.A. Ball and G. VanGelder. Arch. Environmental Health 13, 601-608 (Nov. 1966).

The increased industrial use of rare earth metals has led to a realization that much remains to be learned about their toxicity, especially the chronic effects. Their use, therefore, may be attended by a real or potential health hazard to personnel using them. In the present investigation mice exposed to gadolinium oxide aerosol for 20 to 120 days were studied for evidence of chronic toxicity. Two to five weeks after exposure started, there was a marked increase in deaths due to pneumonia in mice inhaling the dust. There was also a trend toward shorter life spans in the mice which survived the exposure. Analyses of weight gains and hematologic values failed to show significant differences in exposed mice compared to controls. Although some rare earth dust was removed from the alveoli to the regional nodes, the large amounts left in the lungs several months postexposure suggest that the mouse has an inadequate clearing mechanism for removing this compound. The histological features support the conclusion that even at heavy exposure levels, gadolinium oxide ranks as a low-grade pulmonary irritant for mice, inciting focal areas of interstitial thickening around macrophages which contain rare earth dust, and with very little tendency towards pulmonary fibrosis. An unusual histological finding was pulmonary calcification in the region of the alveolar basement membranes and elastic laminae of small pulmonary vessels of exposed mice. The approximately equal incidence of primary lung tumors, mostly bronchial adenomas, in both exposed and control groups, indicates that gadolinium oxide is not a lung tumor accelerator for this strain of mice. There are 31 references.

165 Acute Tetramethyl Lead and Trimethyl Lead Chloride Intoxication in the Rat. Histopathological and Serological Data. M. Gherardi and A. Gnudi. Med. lavoro 57, 53-59 (Jan. 1966).

Rats were intoxicated with tetramethyl lead administered by inhalation, or with trimethyl lead chloride given intraperitoneally. As observed by previous authors, the rats were very little affected by the action of tetramethyl lead, even if inhaled, while they became severely intoxicated when treated with trimethyl lead chloride. The symptoms produced by the two substances were identical, the only difference lying in the different degree of toxicity. This fact stresses the determining role played by the trimethyl lead ion in the pathogenesis of the intoxication. The main serum indexes studied during the stage of intoxication did not differ significantly from the normal values, and the histological examination of the most important organs did not demonstrate any significant specific changes. -- APCA Absts.

166 Mercury Exposure in a Jewelry Molding Process. A.T. Jones and E.O. Longley. Arch. Environmental Health 13, 769-775 (Dec. 1966).

A jewelry molding process involving the use of a low-melting-point, mercury-cadmium alloy has been investigated in seven small factories. At each, considerable exposure to mercury vapor occurred, ranging overall from 0.17 to 35.0 mg of mercury per cubic meter of air prior to,